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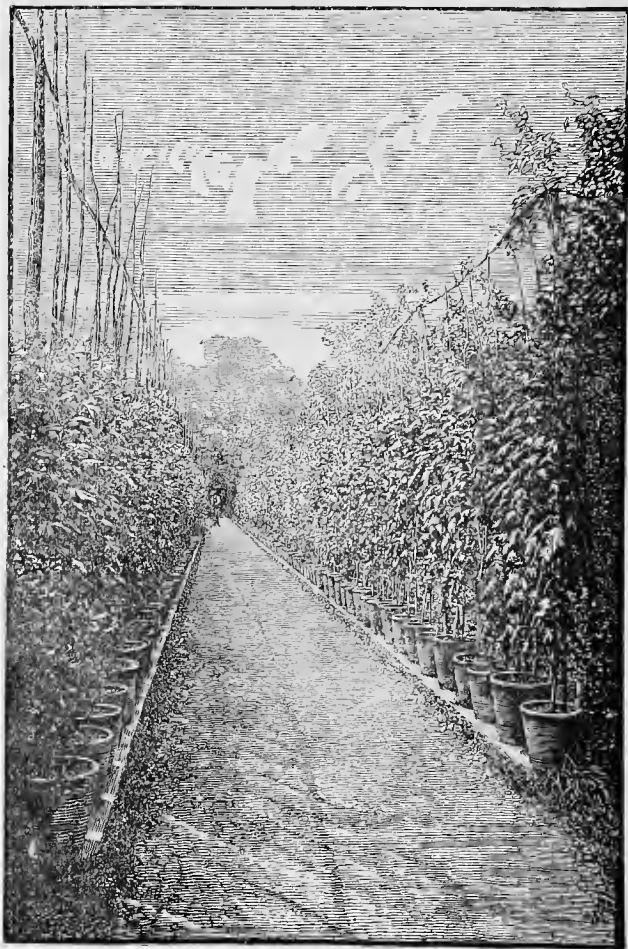
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TO
W. H. MYERS, Esq.,
THIS BOOK IS DEDICATED BY
THE AUTHOR.



SWANMORE CHRYSANTHEMUMS IN SUMMER.

(From a photograph.)

FOURTH EDITION.

CHRYSANTHEMUMS

AND THEIR

CULTURE

(ILLUSTRATED).

A PRACTICAL TREATISE

ON

PROPAGATING, GROWING, AND EXHIBITING,

FROM THE

CUTTING TO THE SILVER CUP.

BY

Edwin Molyneux,

GARDENER TO W. H. MYERS, Esq.,

SWANMORE PARK, BISHOPS WALTHAM.

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LONDON:

171, FLEET STREET, E.C.; AND FROM THE AUTHOR.

1889.

PREFACE.

MANY times have I been requested to detail my experience of the cultivation of the Chrysanthemum for the benefit of others, but I preferred to wait until I had reasonable grounds for speaking with confidence upon the subject. In this treatise I have endeavoured to explain as clearly as possible the culture of this flower in all its stages, and I venture to hope that anyone possessing the requisite means may, if the instructions be faithfully carried out, grow this increasingly popular flower well. The chapters of this work have recently been published in the JOURNAL OF HORTICULTURE, and I have been encouraged by many flattering letters testifying to their service to beginners in Chrysanthemum culture. It only remains now for me to thank those friends who have so kindly assisted me in the work—namely, Miss J. H. Pace for the excellent sketches drawn from nature which adorn its pages, and enhance its value; the proprietors of the Journal mentioned for the illustrations of specimen plants; and Mr. J. Wright, to whom I am indebted for valuable suggestions and for his services as Editor of the work.

E. M.

Swanmore Park Gardens, October 4th, 1886.

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INTRODUCTION.

MR. MOLYNEUX has desired me to write an introduction to this work of his. In doing so I will imagine myself in the position of chairman at a great meeting of Chrysanthemum admirers, the audience including not a few skilled growers, but consisting mainly of gardeners and amateurs who have not quite learned the art of growing, finishing, and staging the magnificent blooms that are requisite for winning silver cups in the best competition, and this great assemblage awaiting the narration of the routine of a cultivator who has achieved more than an ordinary share of success during his career as an exhibitor. My duty, then, is to introduce Mr. Molyneux to his audience.

As it is always desirable to know somewhat of the claims of an author that are supposed to entitle him to a hearing, I will present to you the credentials of our friend, who will speak to you plainly and without reserve on the subject on which we are all interested—a subject at once fascinating and ennobling, for it is no less than seeking to develop in its fullest beauty one of the brightest gifts of Heaven, sent to cheer and gladden us in the deepening gloom of the waning year—the Chrysanthemum.

Mr. Molyneux, though he has only been an exhibitor of Chrysanthemums during a period of six years, has won eighty-six prizes, and of these no less than seventy-four were firsts. Moreover, these prizes were won in competition with the best growers of the day at the leading shows in the south of England; and the Swanmore blooms were placed first during four consecutive years in the great cup class at Kingston-on-Thames—a feat unparalleled in the annals of Chrysanthemum showing.

Our author, whom I am now introducing, appears to have been impressed by the grandeur of the blooms he saw staged some years ago at the Liverpool shows, and was fired with an ambition to produce similar, and, if possible, superior examples. He had no training from the celebrated “men of the north,” but has carved out his own success in his own way. He has had advantages, no doubt, that do not fall to the lot of all men—a well-appointed garden cherished by its owner, W. H. Myers, Esq., who has provided all requisite means for high culture, and given encouragement that has contributed in no small degree to the remarkable success that has been attained by his gardener as a cultivator of Chrysanthemums among other things, that are “done well” at Swanmore. That Mr. Molyneux has turned

those advantages and his own admitted abilities to good account is evident by the "records" that may not inappropriately be adduced here.

Mr. Molyneux commenced his exhibiting career at Southampton in 1880 by winning four first prizes. In 1881 he won two firsts and two seconds at Southampton, two firsts and one second at Richmond, and a first and a third at Kingston. In 1882 he won five firsts at Southampton, an equal number at Kingston, including the champion cup, and one second prize. In 1883 he won six firsts at Southampton, seven firsts at Kingston, including the champion cup, and four firsts at Winchester. In 1884 he won six firsts at Southampton, five firsts at Winchester, and six firsts at Kingston, including the champion cup, with two seconds. In 1885 he won one first at Southampton, seven firsts, one second, and one third at the Crystal Palace, five firsts and one second at Winchester, with eight firsts, including the champion cup the fourth consecutive time, also one second and one third prize at Kingston. Those, then, are the credentials that show what manner of man our author is, and I bespeak for him a hearing from the multitude who will heed what he has to say on the flower which he grows so well, and in the cultivation of which so many are striving and longing to be proficient. He will tell his story plainly, in the hope that it will convey lessons to "beginners" that would once have been of service to himself. To others he leaves the task of collating the history and associations of the Chrysanthemum, his object being to reveal only his own practice, and his best and most appreciated reward will be to see a host of others rise superior to himself in the work of cultivation. And what does this involve? The possession of qualities and the exercise of virtues that not only make better Chrysanthemum growers but better gardeners and better men than those who lack their acquisition and their use. Forethought; attention to small matters; painstaking care; sustained industry; continued watchfulness; accuracy of observation; methodical habits; and a persevering unconquerable determination to excel—all these qualities or virtues, call them what you will, are necessary to enable a man to rise above his fellows in Chrysanthemum growing as in other affairs of life. "Is there one," says John Hunter "whom difficulties dishearten, who bends to the storm? He will do little. Is there one who *will* conquer? That kind of man never fails."

With these too lengthy remarks I conclude, and call upon Mr. Edwin Molyneux to tell all he knows about growing Chrysanthemums from the cutting to the silver cup.

J. WRIGHT.

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CHRYSANTHEMUMS AND THEIR CULTURE.

PREPARING PLANTS FOR CUTTINGS.

HAVING been requested to detail my experience in cultivating these increasingly popular flowers, I will begin at the beginning, and describe the treatment of plants after blooming for the purpose of getting the best cuttings for propagation. I regard a favourable start as being necessary to a successful finish. The foundation must be thoroughly laid to insure that success which all should strive to attain who engage in the cultivation of this flower.

When the plants have done blooming cut those varieties that are plentiful producers of cuttings down to within a few inches of the soil, but do not cut shy-growing, new, or scarce varieties lower than 2 feet above the soil, as more opportunity is then afforded for the plant to break and produce cuttings, although they are not so good in quality as those pushing from the soil or close to it, for the reason that those growing out of the hard stem are much more likely to show flower buds prematurely—often, indeed, as soon as the young plants commence growing. This should be avoided as much as possible. Still, where the variety is scarce, it sometimes happens that we must have these cuttings or none at all.

Place the pots containing the old roots or stools in any cool house as close to the glass as possible, to prevent the growths becoming drawn and consequently weak. No situation is better for them than a vinery or Peach house at rest where plenty of light can be had consequent on the foliage of the Vines or Peaches having fallen. Some growers place them in cold frames, which answers very well, except in the event of very hard frost; in that case the plants require protection, or the young growths will be injured if not spoilt, as they are very tender at this stage by reason of their having been growing a long way from the glass prior to cutting down.

Some varieties will throw up cuttings so freely as to become weakened by being crowded. When this is likely to occur thin out the weakest shoots in good time to give space to the stronger. In the case of any varieties not promising to afford a sufficient number of cuttings, loosen the surface soil, and if the roots are bare through the continual drenchings of water given previous to the plants blooming, cover the roots with light gritty soil composed principally of leaf mould and sand. Examine the drainage to make sure the plants are not waterlogged, and give occasional waterings with weak liquid manure, which will tend to strengthen the growths. Too much water applied to the roots will induce a yellow sickly growth, which must be avoided. It sometimes happens that some plants will refuse to start at all without special treatment. After correcting any defect in the drainage place such plants in gentle bottom heat, and syringe the stems occasionally. This is the only way I know of to force stubborn plants into growth. Those starting freely will not require any heat, but merely protection from frost, with plenty of air on all favourable occasions. Green fly occasionally attacks the points of the young shoots, and can easily be got rid of by fumigating with tobacco.

There are other systems adopted by growers to produce cuttings in quantity, which I will endeavour to explain as clearly as I can. In the spring following the plants blooming inside—say in March or April—shake the old roots partly out of the soil and plant them about 3 feet apart in an open position in the garden, previously digging the ground well; but unless the soil be of a very poor description it is not wise to add much manure, as this induces strong and consequently too sappy growth. It is much better to add some fresh soil around the roots when planting, such as refuse soil from the potting bench or the materials of spent Mushroom beds, treading the soil firmly about the plants, which induces a stocky growth. Should the weather be very dry during the summer give water freely and apply a mulching of decayed manure, which dispenses with the necessity of watering frequently when other matters press so heavily. Do not allow many shoots to extend during the summer for flowering, but only sufficient to prove the variety is true to name—an essential point, as many growths weaken the plant somewhat and overcrowd the young shoots, thus drawing them up weakly in the autumn. Should the weather not be severe during November and December good cuttings may be had, but should these be injured by frost the trouble entailed in planting cut and attention during the summer is to a great extent lost. If they once get frozen they are crippled, and do not quickly recover. They can no doubt be sheltered from light frost with straw or litter; but I do not think the advantage derived by this system is adequate to the trouble entailed, as a severe frost is always likely to occur in December, and before the growths recover from its

effects the best season for striking the cuttings is gone. Some varieties, notably of the Christine family, do well under this treatment; but they invariably produce good cuttings freely in the ordinary way when blooming inside.

A much better method of producing sturdy cuttings of varieties that are shy in throwing up suckers, or in the case of new varieties of which the stock is limited, is to strike the side shoots that are often produced in excess during May and June when the plants are grown for large blooms. Instead of throwing these lateral growths away, as is usually done, insert them singly in small pots in sandy soil, plunge in a gentle bottom heat, keeping them close and shaded till rooted, then remove to a cool frame. As soon as the pots are filled with roots shift the plants into 4 or 5-inch pots, using moderately rich soil, pressing it down hard, and short stocky growths so desirable for good cuttings will be produced. Stand the plants out of doors in an open position, allowing one stem only to extend. This will attain a height of 2 to 4 feet according to the variety, and produce one bloom. Such plants are useful for decoration on the side stages of the conservatory or elsewhere. Cut them down rather early after blooming, and they will be certain to produce good suckers. I find that they always throw up more freely when grown in small pots in the manner described than when grown in the orthodox way for affording exhibition blooms, as no doubt the constant removal of the suckers during the summer treatment weakens the plants for the after-growth of cuttings. This does not occur when grown as above indicated. As the primary object is not the production of large flowers, but sturdy shoots for propagation, this is a system which I can strongly recommend as being certain to insure success.

Another system, sometimes practised by nurserymen who require cuttings in large numbers, is the following:—After cutting down the stems the roots are partly shaken out of the soil and planted thickly together in heated pits, where they can have a little bottom as well as top heat, keeping the plants close to the glass. In this manner space is economised by the removal of the large pots from the houses, but in private gardens heated pits are seldom so numerous that they can be devoted to this purpose. Gardeners, as a rule, have to adapt themselves to more economic principles, and cuttings forced in heat are not so good as those grown naturally in cool houses from the first.

BEST TIME FOR STRIKING CUTTINGS.

Opinions differ considerably as to when the cuttings ought to be struck. Some growers find one time the best, and some another. My experience is that there is no hard-and-fast line to follow in this matter, because it occasionally happens that cuttings of some

varieties cannot be had when desired, so stubborn are the plants in producing them. As Chrysanthemums are grown for various purposes, and as all cultivators do not grow the plants for the same end, it will be better to state the best time to propagate for each system of cultivation. This I will endeavour to explain. Having made this phase in the cultivation of Chrysanthemums a special study, I am certain the times named are the best for the various purposes indicated; but, as above suggested, it is not absolutely necessary to carry out the work at the exact time mentioned in all cases.

In growing the plants for the production of cut blooms for exhibition, any time after about the 10th of December till, say, the same date in January is the best period for propagation; but when the cuttings can be had the former date is preferable, as more time is then allowed for steady growth in a cool temperature, and growths thus produced have the best possible chance of becoming solid through the proper maturation of the tissues of the plants. Some growers prefer to strike the cuttings in bottom heat in February and March, but plants treated in this manner are never so good for the production of such high-class blooms as are afforded by plants raised earlier, for the reason that time will not allow of their proper development during the various stages of growth. The wood of late-struck plants never ripens thoroughly, which is a decided disadvantage much felt by growers in the extreme north of England. Another objection to late propagation is the space required to preserve the old plants for the production of cuttings for two months longer than is necessary when early propagation is adopted, as the space required for the cuttings is obviously much less than is needed for accommodating the old plants, and at that time of the year space is valuable. Nor can the cuttings be preserved in such a good state as they are two months earlier, as they are sure to become drawn and weakened, and in this condition they sustain a greater check in being severed from the parent plants; and checks in any form and at any time are certainly detrimental to the welfare of the plants.

Some growers strike Chrysanthemum cuttings in November. This I consider too soon, as plants raised so early are liable to give trouble in April and May by insisting on the production of bloom buds instead of growth shoots. This is a source of great annoyance—particularly to growers in the south of England. When the plants do this nothing short of cutting them down to near the soil will check their premature blooming, and often the growths made after this cutting down are useless through the same cause—a production of flowering instead of growth shoots. Some varieties are more liable to this than others, but the evil is mainly induced by the too early propagation of the plants. Growers in the north are not troubled nearly so much with this precocity as those in the

south, because the seasons being earlier the plants grow so much faster during March and April than they do in the north ; therefore it is wise for growers resident in the north to propagate as near the first-named date (December 10th) as possible, always commencing with the weakest-growing varieties (of which Lady Hardinge and Criterion are examples), as these require a longer season of growth than the more robust kinds, of which Prince Alfred is an instance.

Some growers say that late propagation reduces the height of the plants. This is correct in some instances, but it is generally at the expense of the blooms. To insure these in the highest possible condition height is essential. I have not yet seen—save in quite an exceptional case or two, through some unaccountable reason—blooms of the same quality produced on dwarf plants as upon those grown in what I will term a more natural manner in regard to the relative heights attained under the two systems. Let it be clearly understood I am speaking in a general sense of those varieties which are naturally tall, and not those which are habitually dwarfer under any system of treatment ; therefore I contend that to produce blooms of the highest class the plants must be treated somewhat in a natural way of growth.

For trained specimen plants of various shapes to attain a large size the early part of December is the best for propagation, as it is quite necessary that the plants have a long season of growth, which cannot be had by striking cuttings late. The production of premature buds above mentioned is somewhat prevented by the frequent pinching out of the points of the shoots, this being necessary to get them of the size and number required before they have grown sufficiently long to form flower buds.

Chrysanthemums intended for what is termed decorative or bush plants do not require to be struck so soon as those intended for large specimens or for exhibition blooms, medium or smaller plants being more useful for decoration, and for this purpose quantity of bloom is of more consequence than quality of the individual flowers ; therefore any time during the end of January or early in February will be soon enough. Pompons being so well suited for the decorative system are also better struck at the same time, but where they are grown for the production of exhibition blooms or specimens the cuttings ought to be inserted at the end of December or early in January.

PROPAGATION.

Striking the cuttings of Chrysanthemums is an important item in the growth of these plants. There are various methods practised, some finding one to answer best and some another. As most persons like to know which is not the correct way to do certain

things as well as they like to understand the proper lines to follow, I will first describe the system I have found the best, and state the reason it is so. I will also detail a few other methods which are faulty, and consequently not to be recommended.

An idea largely prevails among the inexperienced that bottom heat is requisite for striking the cuttings. This is quite a mistake, as the application of heat at this stage tends to weaken the after-growth of the plants. They should be grown as sturdily as possible, never exciting them so as to unduly draw them up, particu-

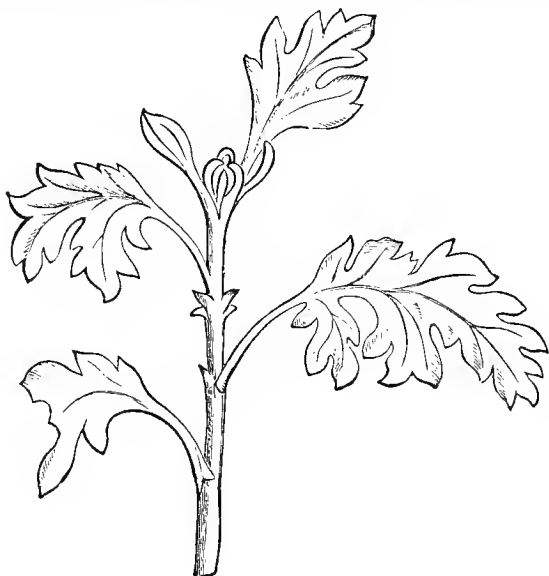


Fig. 1.

early in the early stages. This is an important point to bear in mind. A great deal depends upon the quality of the growths to begin with. A weakly-grown cutting can be made to improve very much, but while that is taking place much valuable time is lost; therefore select thoroughly good cuttings.

Both good and bad cuttings are represented in the annexed engravings. Fig. 1, as can be seen by the bloom bud in the axils of the leaves, is the wrong one. This was taken from the stem of a plant. No difficulty would be experienced in striking this cutting,

but the chances are that before it had grown beyond an inch or two other bloom buds would form instead of growth shoots, and sometimes no shoots are produced, so stubborn is the plant to alter its course ; therefore to take such cuttings as these is sheer waste of time. The cutting shown in fig. 2 is the kind to select. It was taken at some distance from the stem of the parent plant, and gives promise of free uninterrupted growth. They should be about 3 inches long, not too sappy, and cut square across below a joint. Stout suckers find favour with some growers—namely, growths that

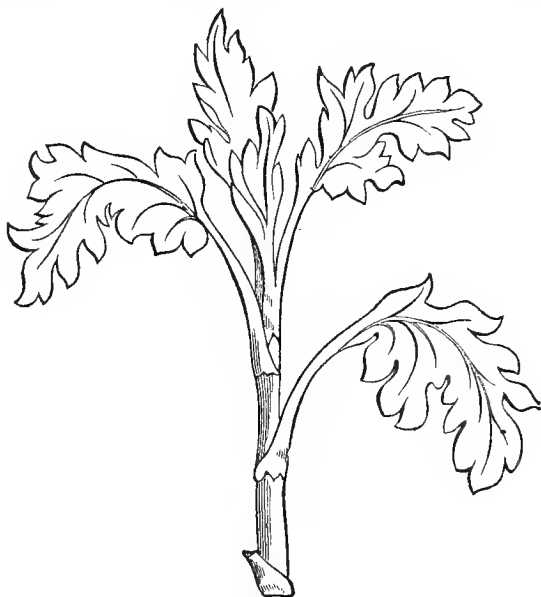


Fig. 2.

push through the soil and taken off when about 2 inches long with bristling roots attached. This is a simple method, and the plants may be grown quite as good as from the orthodox cuttings. One objection only do I see to the sucker system—if the stock of any particular variety is scarce it obviously cannot be increased so quickly as if a cutting is severed above the soil, leaving a portion of stem to produce further growths. Some growers cut out the buds or eyes from the lower part of the cuttings to prevent the

growth of suckers in the summer. This I do not consider necessary nor wise, because the production of suckers in a proper manner does not interfere with the well-being of the parent plant, and where is the stock of cuttings to come from for another season if such strict measures are taken to prevent their growing at all?

Having explained the kind of cutting to select, I will endeavour to make as clear as possible the best means of striking them. The best of all methods is under handlights, or in a propagating frame, placed in a house having a temperature of from 40° to 50° . These should be on the side stages, and as near the glass of the roof as possible, so as to prevent the cuttings becoming drawn. If handlights are not available boards affixed in the shape of a frame with laths across at suitable distances to support loose squares of glass will suffice. These home-made appliances answer the purpose well as long as they are air-tight or nearly so. Some growers strike their cuttings in a cold frame, but my reason for preferring a cool house is that much time is often lost in a frame through severe weather. I have seen them frozen hard in the pots for a fortnight. This will not kill them, but while they are in that condition they are not making roots, therefore must be losing time; and if they are protected from frost they must be sometimes covered for several days, which renders them liable to suffer from damp. Certainly they are more checked in this position than in a house where light is not obstructed, and if they are not subjected to frosts they are less liable to suffer from damp. Some persons strike them in pots on shelves close to the glass in an ordinary greenhouse, but in such a position they often flag very much, rooting is retarded, and time lost. They ought not to flag at all. Five or six cuttings are occasionally inserted round the edge of a 4-inch pot. They strike readily enough in this way, but when the plants are potted singly they receive too severe a check by the loss of soil from the roots during the operation of separating them. When the cuttings are placed singly in small pots no such check can occur in shifting the plants into larger, as no disintegration of the roots or soil need take place. This I consider a sufficient reason why the cuttings should be inserted singly in pots. These should be about $2\frac{1}{2}$ inches in diameter (inside measure), commonly called thumbs. Long narrow pots are the best, as the roots strike directly downwards, and a larger number of such pots can be arranged in a given space than others of the same capacity—wider, but not so deep. The pots should be perfectly clean.

When I say never use a dirty pot some persons may perhaps imagine I am too particular about little things; but it is by rigid attention to the smallest matters that the greatest successes are won. In turning plants out of pots that were dirty when used the roots cling so tenaciously to the sides that many are broken in the

action of removing them. This does not occur when the pots were clean, but the plants are shifted with their roots intact, and do not experience the slightest check from the operation. One crock in each pot is sufficient for drainage, covered with a little rough decomposed leaf soil, or, what is handier, the rough pieces taken from the soil in passing through a half-inch sieve, which is necessary in using pots of this size. Fill the pots firmly with soil, the best for the purpose being composed of about equal parts of leaf mould and light loam, with a free use of coarse silver sand thoroughly mixed. On the top sprinkle a small quantity of sand, to be carried down with a blunt dibber for the cuttings to rest on, the rooting process being quicker among sand than soil. The soil should be pressed firmly round the cutting, particularly its base, and a gentle watering given through a fine-rosed waterpot to settle the soil and sand. Stand the pots on sifted ashes for securing a cool moist foundation and excluding air. The lights must be kept closed until roots are formed, with the exception that they may be taken off for an hour in the morning for the dissipation of excessive moisture, and in the evening the glass should be wiped dry. This in the dull days so often experienced at this time of the year prevents damping. Shading will not be required. In about a month some of the cuttings will be rooted. The strongest-growing varieties are the earliest to emit roots. A little air should then be admitted by tilting the lights slightly at first and increasingly until they can be safely removed. But while some of the plants need air the leaves of others will flag. This is caused by those particular kinds not rooting quickly and strongly. These should be removed to a frame by themselves, where they can be kept closer than those which do not flag and require more air to retain that stocky growth which is such an advantage. Through keeping the frames closed little water is required during the process of rooting, yet the soil must be kept sufficiently moist for the support of the cuttings or plants.

Another method of propagation is occasionally practised by persons wishing to save space. Soil to the depth of 4 inches is placed in a heated pit or on a hotbed, into which the cuttings are dibbled, keeping them closed till rooted. In this way they strike readily, but it is a system not to be encouraged, as the check caused to the plants in transferring them to pots is too severe, and the crowding in the bed also causes them to be drawn up weakly.

SELECTION OF VARIETIES FOR VARIOUS PURPOSES.

In giving a selection of varieties for various purposes I have endeavoured to name those which are distinct. They are all well adapted for growing in the style in which they are classed. There

are perhaps a few newer varieties which will take a leading position when they become better known, but not having had an opportunity of testing them I prefer to leave them out through fear of causing disappointment. For those growers who cannot have all the varieties named in each section I have placed the varieties first which I consider the best ; therefore a reduced selection can be made according to the number required. As these varieties are so well known the full descriptions and colours of each can be had from any of the many excellent catalogues now published.

FORTY-EIGHT JAPANESE VARIETIES FOR CUT BLOOMS.

Mdme. C. Audiguier	Peter the Great
Belle Paule	Elaine
Fair Maid of Guernsey	Soleil Levant
Meg Merrilies	Album plenum
Jeanne Delaux	Japonaise
Baron de Prailly	Mr. John Laing
Criterion	Mdme. Bertie Rendatler
Val d'Andorre	Mdme. de Sevin
Boule d'Or	Balmoreau
Mdlle. Lacroix	Flamme de Punch
Margaret Marrouch	Mons. Tarin
Comte de Germiny	Grandiflorum
Duchess of Albany (Jackson)	Fanny Boucharlat
M. Astorg	M. Delaux
Mrs. Mahood	Mdme. Deveille
M. Ardene	Sarnia
Sceptre Toulousain	Bouquet Fait
Golden Dragon	Dr. Macary
Fernand Feral	Red Gauntlet
Hiver Fleuri	Margot
Thunberg	Père Delaux
M. Burnet	Triomphe du Nord
L'Adorable	L'Africaine [George Gordon]
Triomphe de la rue des Châlets	La Nympe

TWELVE JAPANESE FOR SPECIMENS.

Bouquet Fait	Comet
Hiver Fleuri	Lady Selborne
L'Africaine	Fair Maid of Guernsey
La Nympe	Album plenum
Peter the Great	Joseph Mahood
Mdme. Bertie Rendatler	Triomphe du Nord

FORTY VARIETIES INCURVED FOR CUT BLOOMS.

Lord Alcester	Princess of Wales
Empress of India	John Salter
Queen of England	Lord Wolseley
Golden Empress	Prince Alfred
Golden Queen of England	Jeanne d'Arc
Alfred Salter	Hero of Stoke Newington

FORTY VARIETIES INCURRED FOR CUT BLOOMS—(continued).

Jardin des Plantes	Nil Desperandum
Mrs. Heale	Miss Mary Morgan
Princess of Teck	White Venus
Refulgence	Novelty
Mr. Bunn	Beauty
Empress Eugénie	Mr. Brunlees
Mrs. W. Shipman	Eve
Lady Hardinge	Nonpareil
Lady Carey	Bronze Jardin des Plantes
Sir Stafford Carey	Yellow Perfection
Princess Beatrice	Pink Venus
Cherub	Mabel Ward
Baron Beust	Lady Slade
Barbara	Prince of Wales

TWELVE INCURRED FOR SPECIMENS.

Lord Alcester	Mrs. Sharpe
Empress of India	Mrs. G. Rundle
Queen of England	Mrs. Dixon
Golden Queen of England	George Glenney
Golden Empress	Venus
Prince of Wales	Lord Derby

FIFTEEN REFLEXED VARIETIES FOR CUT BLOOMS.

Cullingfordi	Phidias
King of Crimson	Peach Christine
Golden Christine	Pink Christine
Distinction	Chevalier Domage
Mdme. Madeline Tezier	Felicity
Mrs. Forsyth	Sir Edwin Landseer
Cloth of Gold	Emperor of China
Dr. Sharpe	

SIX REFLEXED FOR SPECIMENS.

Dr. Sharpe	Pink Christine
Mrs. Forsyth	King of Crimson
Peach Christine	Chevalier Domage

TWELVE ANEMONE VARIETIES FOR CUT BLOOMS.

Lady Margaret	Empress
Fleur de Marie	Georges Sands
Gluck	Prince of Anemones
Acquisition	Mdme. Goderaux
Minnie Chaté	Princess Louise
Mrs. Pethers	Louis Bonamy

EIGHT VARIETIES ANEMONE JAPANESE FOR CUT BLOOMS.

Fabian de Mediana	Margaret Villageoise
Mdme. Clos	Souvenir de L'Ardenne
Sœur Dorothea Souille	Mdme. Berthe Pigny
Mdlle. Cabrol	Duchess of Edinburgh

TWENTY-FOUR VARIETIES FOR GROUPING.

Val d'Andorre	George Glenny
Triomphe du Nord	Jeanne Delaux
Mons. Henri Jacotot	Meg Merrilies
Mdme. de Sevin	Elaine
M. Astorg	King of Crimsens
Cullingfordi	Jardin des Plantes
Mdlle. Lacroix	Prince Alfred
Bouquet Fait	Mr. Bunn
Princess of Teck	Chevalier Domage
Mdme. C. Audiguier	Simon Delaux
Mrs. G. Rundle	Dr. Macary
Mrs. Dixon	Hero of Stoke Newington

TWENTY DECORATIVE VARIETIES.

Lady Selborne	Mdme. Desgrange
Mrs. G. Rundle	Triomphe du Nord
Mrs. Dixon	Simon Delaux
George Glenny	Mons. Mousillao
Mons. H. Jacotot	L'Africaine
Cullingfordi	Margot
James Salter	La Nymphe
Flocon de Niede	Flambeau
King of Crimsens	Dr. Sharpe
Bouquet Fait	Progne

FOURTEEN VARIETIES FOR LATE BLOOMING.

Princess of Teck	Miss Maréchaux
Hero of Stoke Newington	Fanny Bouchardat
Meg Merrilies	Ethel
Ceres	Miss Margaret
Grandiflorum	Thunberg
Mrs. C. Carey	Nonpareil
Fair Maid of Guernsey	Lady Carey

FIFTEEN VARIETIES OF POMPONS.

Black Douglas	Pygmalion
President	Nellie Rainford
Marabout	Prince of Orange
Toussaint Maurisot	Reine d'Or
La Pureté	Cendrillon
Madame Marthe	Eléonore
Golden Madame Marthe	Rosinante
Lizzie Holmes	

TWELVE VARIETIES ANEMONE POMPONS.

Madame Montels	Marguerite de Col
Queen of Anemones	Perle
Antonius	Sidonie
Mr. Astie	Marie Stuart
Regulus	Zobedie
Calliope	Aglais

SIZES OF EXHIBITION BLOOMS (A GUIDE).

It is difficult for inexperienced growers to know what size to aim at in growing *Chrysanthemum* blooms for exhibition. They are often in error in judging their own flowers, not having seen really representative specimens of the various kinds. The best of all guides is measuring the flowers, and keeping records of them for comparison in following years. I give the sizes of some of the blooms which have been grown at Swanmore Park. The list could be much increased, but will suffice as typical of large, medium, and smaller varieties. Larger measurements could be given, but not consistent with the depth and solidity required, these qualities being absolutely necessary for blooms to win in good company at the leading exhibitions. Flowers are often measured larger in diameter, particularly in the early season, but they lack depth and solidity; therefore I should warn young beginners to pay more attention to depth than mere width, especially in the incurved section. The first figure following the name in the following list denotes the diameter of the flower in inches, and where a second figure is given that signifies the depth of the bloom. The best way to measure the blooms when on the plant is to place the left hand under the florets and gently raise them to a horizontal position, then with a rule passed under the size can be determined. In the case of irregular-petalled kinds it is not well to take the extreme outside size, but take a fair average measurement consistent with the depth of the flower. Sometimes one or two florets will have advanced a long way beyond the general quantity, and to measure such would be misleading, as all flowers of the same kind do not have these extra long florets. In considering the depth allowance must be made for the reduction in that part which is made when incurved blooms are cupped ready for show, to allow of the petals being arranged in proper form, and reduces the flowers in depth considerably, because the weight of the petals without support has a tendency to deepen the blooms, and when measured in this manner disappointment often occurs when prepared for exhibition. Ours are generally measured when arranged on the stands ready for conveyance to the show.

JAPANESE.—M^{de} Audiguier, 7 by 6 inches; Meg Merrilies, 9 inches; Fair Maid of Guernsey, 8½ inches; Comte de Germiny, 6 by 4 inches; Elaine, 6 by 4 inches; Baron de Prailly, 9 inches; Jeanne Delaux, 6 inches; Criterion, 6½ by 4 inches; Boule d'Or, 8 by 5 inches; Marguerite Marrouch, 6½ by 4½ inches; Md^{lle}. Lacroix, 7½ by 4 inches; Hiver Flenri, 6 by 4 inches; Peter the Great, 6 by 4 inches; Mons. Tarin, 7½ inches; Thunberg, 7 by 4½ inches; M. Ardene, 7 by 4 inches.

INCURVED.—Lord Wolseley, 6 inches; John Salter, 6 inches; Jeanne d'Arc, 5 by 4½; Princess of Wales, 6 by 3 inches; Empress of India, 6 by 4 inches; Queen of England, 6 by 4 inches; Golden Empress, 5½ by 3 inches;

Alfred Salter, 6 by $3\frac{1}{2}$ inches; Hero of Stoke Newington, 5 by 4 inches; Princess Teck, $4\frac{1}{2}$ by $2\frac{1}{2}$ inches; Mrs. Bunn, 5 by 3 inches; Refulgence, 5 by 3 inches; Barbara, $4\frac{1}{2}$ inches; Eve, $4\frac{1}{2}$ by $2\frac{1}{2}$ inches; Jardin des Plantes, $5\frac{1}{2}$ inches; Lady Hardinge, $4\frac{1}{2}$ by $2\frac{1}{2}$ inches.

REFLEXED.—King of Crimsons, 6 by 4 inches; Golden Christine, 5 by 3 inches; Dr. Sharpe, 5 by $2\frac{1}{2}$ inches; Cloth of Gold, 5 by $2\frac{1}{2}$ inches; Mrs. Forsyth, $4\frac{1}{2}$ by $3\frac{1}{2}$ inches; Pink Christine, $4\frac{1}{2}$ by 3 inches.

ANEMONE JAPANESE.—M^{de}m. Clos, $6\frac{1}{2}$ inches; M^{de}m. Cabrol, 8 inches; Sœur Dorothee Souille, 6 inches; Fabian de Mediana, 8 inches.

ANEMONE FLOWERED.—Acquisition, 6 inches; Fleur de Marie, 5 inches; Mrs. Pethers, 6 inches; Gluck, $4\frac{1}{2}$ inches.

NUMBER OF PLANTS REQUIRED TO GIVE BLOOMS IN FORTY-EIGHT, TWENTY-FOUR, AND TWELVE VARIETIES.

Young growers are often much puzzled to know how many plants they should cultivate with the intention of having a given number of exhibition blooms at a certain date. Many persons think it right to grow a very large number of varieties, but in this case the old adage, "Safety in numbers," does not apply; quite the reverse. It is far better to select a fixed number of varieties best suited for the purpose intended, growing a number of plants of each, than to be burdened with a host of kinds that cannot be relied on for the object in view. Several varieties are admittedly useful for other purposes than supplying exhibition blooms of the highest quality; but if the production of these is the main point, varieties that do not afford them should be eschewed. I strongly advise all who have not had experience to bear in mind when forming collections that variety may have charms, but not in all cases value.

If an exhibitor wishes to stage forty-eight distinct blooms, twenty-four of which may be incurved and the remainder Japanese, he should grow at least thirty-six varieties in each section, as all are not to be depended upon to produce what is required. In some seasons one sort is quite useless, whereas the next year quite the reverse may occur. Casualties, too, may happen during the season of growth quite unexpectedly, such as shoots being broken at a critical period by wind, and other unforeseen circumstances; therefore not less than the number stated should be depended upon to insure success. These should consist of the very best, as named in the list previously given. It will be necessary to have 300 plants to effect the object in view, or 150 in each section. In the twenty-four class, supposing them to be half incurved and the remainder Japanese, twenty-four varieties in each section are not too many to grow, and the total number of plants should not be less than 150. When confined to a smaller class of, say, twelve distinct, either Japanese or incurved, the selection should be more rigid than in

the larger classes, as there is not so much margin allowed for an inferior specimen or two in smaller, where all are expected to be of the first merit. Twenty-four names should be chosen, and about seventy plants grown, giving the preference to those named in the first part of my list in each section.

To afford blooms for a stand of twelve varieties the selection should be rigorously made (even more so than in the large classes), selecting those kinds which are known to be the most certain producers of fine flowers. In competing in a class for twelve blooms, either Japanese or incurved, the general good quality should run right through the stand, as in such small classes there is not the same opportunity to insert a moderate bloom or two as there is in larger classes. For the benefit of inexperienced growers I append a list of the best twenty-four kinds in each section and the number of each variety it would be advisable to grow for the purpose named :—

TWENTY-FOUR VARIETIES JAPANESE.—Four Madame C. Audiguier, four Belle Paule, three Fair Maid of Guernsey, four Jeanne Delaux, three Baron de Prailly, four Criterion, four Val d'Andorre, three Meg Merrilies, three Boule d'Or, three Marguerite Marrouch, three Comte de Germiny, three M. Ardene, three M. Burnet, two Hiver Fleuri, two Thunberg, two M. Astorg, two Elaine, three Duchess of Albany (Jackson), two Japonaise, three Fernand Feral, three Golden Dragon, two Peter the Great, two Sceptre Toulousain, three Mlle. Lacroix.

TWENTY-FOUR VARIETIES INCURVED.—Four Lord Alcester, four Empress of India, four Queen of England, four Golden Empress, three Golden Queen of England, four Alfred Salter, three Princess of Wales, four John Salter, two Lord Wolseley, three Prince Alfred, three Jeanne d'Arc, four Hero of Stoke Newington, three Jardin des Plantes, two Mrs. Heale, three Princess of Teck, two Refulgence, two Mr. Bunn, two Empress Eugénie, three Mrs. W. Shipman, two Lady Hardinge, two Lady Carey, two Sir Stafford Carey, three Barbara, two Cherub.

MANAGEMENT OF YOUNG PLANTS.

This is a very important phase in the cultivation of the Chrysanthemum, as upon the treatment they receive in the early stages their future welfare depends. Especially they should not be checked in any way, or they will be stunted. When the plants are well rooted and will bear free exposure to the air without flagging remove them from the handlights and place them upon a shelf close to the glass in the same house where they were struck. The advantage of a light position is that it prevents their becoming weakly. They also get more air than they can have when placed

on the side stages of the house if ventilation can be given at the top of the house. If the house is not provided with shelves temporary ones can easily be put up by suspending them from the rafters by means of strong wire and screws. The shelves may be about 9 inches wide, according to circumstances, and on each side there should be a groove to run the water off to one end, which can easily be done by allowing a slight slope in fixing the shelves. Any plants standing underneath the Chrysanthemums are then not splashed by the water given to the plants overhead.

At this stage I prefer a cool house to a cold frame for the plants for the same reason as explained in the case of cuttings—that less trouble is caused in preserving them from frost and allowing them exposure to light; but the house must be kept perfectly cool—just enough heat to prevent the plants being frozen. In such a house the air can be maintained in a drier condition than in a cold frame, and mildew, which frequently attacks the young plants, can be more easily dealt with. Great care should be exercised in supplying water, never allowing the soil to become dry.

The future object of the plants must be now determined. Those that are intended to be grown for the production of cut blooms or groups will not require stopping. When the pots are well filled with roots, and before they become root-bound, they will require larger pots. At this time the size in which they are to bloom must be taken into consideration, and for the bulk of the varieties 9-inch pots are large enough, and then the first shift from the cutting pots should be into those 3½ inches wide. The next time employ pots 5½ inches in diameter, and transfer the plants from these to the 9-inch pots. If growers desire to use larger pots, say those 10 inches in diameter, 4½-inch pots should be used at the first shift, next 6½-inch size, and then the 10-inch pots. Where pots of 10½ and 11 inches are in stock I prefer placing two plants in each in preference to potting them singly, using the weaker-growing sorts. By this means a great saving in space is effected, as nearly double the quantity of plants can be grown in the same space. To prepare the plants for these pots at the first shift they should go into the 3½-inch size and then into the 5½-inch size, which allows them to be the right size to occupy the 11-inch at the final potting. As the “cast” sizes vary at different potteries I think it better to give the sizes in inches, always measuring inside.

The soil used for this first potting should consist of two parts fibry loam, one part leaf soil, and one part of spent Mushroom bed materials, with a free admixture of sharp silver sand; if the loam is inclined to be heavy add crushed charcoal freely, which keeps the whole porous. For the greater convenience in potting pass the compost through a coarse sieve, rubbing the fibrous pieces through also; the pots must be quite clean and carefully drained; over the crocks place some of the rougher parts of the soil and pot firmly.

If the soil is moist when used no water will be required for a day or two ; after this time they must not be allowed to suffer by want of it, neither must they have too much. Return them after potting to their former position on the shelves till the roots run through the soil to the sides of the pots ; place a neat stake to each and transfer them to a cold frame or pit, standing them upon ashes near to the glass. Keep the frame rather close for a day or two, avoiding draughts, after which admit abundance of air according to the state of the weather. On very fine days take the lights off for a time, as by this means the plants are kept "stocky." As soon as the pots are filled with roots they are ready for their second shift as described, the soil consisting of the same materials as at the last potting, with the exception that fine ground bones can be added freely, and a 5-inch potful of soot to 4 bushels of soil, potting the plants more firmly than previously.

SPECIAL TREATMENT FOR WEAK VARIETIES.

Some varieties of Chrysanthemums are much weaker in constitution than others, consequently they require rather more care to develop their qualities than those of a more robust habit. Some of them are handsome in form, and their general good quality renders them indispensable in a first-rate collection. By a judicious course of treatment the difficulty attending the successful culture of weak varieties can be overcome. For the guidance of those persons who do not know the varieties referred to as weak growers, I have compiled a list of them, and detail the method of managing the plants, which I commend to the special attention of the inexperienced. The list comprises only those which are meritorious and worth growing.

As previously stated, propagation should commence with these as early as possible, so as to give them a long season of growth and to avoid undue excitement, such as forcing them in heat to make up for the time that is lost by striking the cuttings late. At the first potting from the cutting stage place the plants in 3½-inch pots, adding half a part more of leaf soil to the compost previously advised. Treat the plants in the same way as the general stock as regards position and watering. When they are ready for the next shift, which should be into 5-inch pots, the soil should be the same as before. From these they can be transferred into their flowering pots, which should be 8 inches in diameter. The soil used in potting them finally should be of a lighter kind than that used for those of stronger growth. The following preparation is suitable : To three parts of half-decomposed fibry loam add one part each of half-decayed leaves, used in a rough state, and the materials of a spent Mushroom bed, half a part of wood ashes, the same quantity

of fine ground bones, one part of coarse silver sand and charcoal broken about the size of Hazel nuts, the quantity to be in proportion to the nature of the loam, be it light or heavy. This materially aids in keeping the whole porous—a point of much importance during the summer, when water must be applied at times copiously. If the loam is of a strong nature the fine soil should be taken out by passing it through a sieve, retaining only the fibrous parts, as the fine soil prevents to some extent the free passage of water from the roots. The pots should be very carefully drained, and the soil pressed firmly around the roots, but not quite so hard as in the case of the stronger growers, weak varieties not making roots in the same proportion as the others. The great point, then, is to prepare suitable soil, have the pots of the right size, treat the plants judiciously with regard to watering in all stages of growth, and satisfactory results may be anticipated, if other requisite details in treatment are carried out. It is a good plan to stand these plants by themselves during the summer, as they are then more directly under control, and are not so apt to be overlooked as when placed among the general collection. Stimulants should not be applied to them in the same quantity and strength as to those of more vigorous constitution.

The following varieties need the special treatment indicated :—

JAPANESE.—Balmorean, Criterion, Golden Dragon, Garnet Agreements de la Nature, Japonaise, J. Delaux, Margaret Marrouch, Madame de Sevin, M. Ardene, M. Astorg, Mons. Tarin, Mrs. Mahood, Mr. John Laing, Sceptre Toulousain, Beauté des Jardins, and Mons. H. Jacotot.

INCURVED.—Barbara, Cherub, Empress Eugenie, Lady Carey Lady Hardinge, Mr. Bunn, Mrs. W. Shipman, Nonpareil, Princess, Beatrice, Sir Stafford Carey, Angelina, and Lady Slade.

ANEMONES.—Fleur de Marie, Mdle. Cabrol, Madame Clos, and Sœur Dorotheé Souille, to which may be added the two reflexed forms, Dr. Sharpe and Empress of China.

HINTS ON GROWING NOVELTIES.

Some growers of Chrysanthemums have a strong fancy for “novelties,” and are induced to procure nearly all the new varieties as fast as they appear. I say nothing against experienced growers indulging in this floral luxury, but the inexperienced cultivator who is desirous of forming a first collection may easily err in this respect. He sees the descriptions of so-called novelties, and assumes they are improvements on older varieties. This by no means follows. They may be distinct without being superior; indeed, I venture to say that quite three parts of the new sorts sent out in such glowing terms are not equal in merit to many of

the older varieties. What I wish to impress upon beginners is this—Do not rely on catalogue descriptions entirely, which are in the majority of instances copied from French raisers, and the colours as set forth are not always to be found in the flowers produced; and never buy a variety without first hearing something good of it from someone who knows its merits and has nothing to gain in describing them, for it is an assured fact that if a new variety has the necessary qualifications it will not remain long in seclusion. No little disappointment has been caused by purchasing all the new varieties which were expected to produce wonderful flowers. Instead of this it has often been found that time and space have not been well occupied in growing them. Far better is it to grow an extra number of plants of those varieties which experience has proved can be depended upon as certain producers of first-class flowers under first-class culture, than for a grower with limited experience, money, and space to overburden himself with so-called “novelties.” If those persons who are responsible for the descriptions of new varieties were to adopt a much more simple way of describing their qualities they would be doing a public service, enabling growers to purchase the new sorts with much more confidence than at present.

SOILS FOR FINAL POTTING.

Much depends upon the soil used for potting *Chrysanthemums* to obtain successful results. More particularly does this apply to the final potting. Soils of a complex nature are often recommended, as if elaborate mixtures necessarily possess extraordinary virtues. Good soil is important, but at the same time is only one element in the case. Growers who depend almost solely on fanciful mixtures for the production of flowers of the finest quality have much to learn. The effects of the best compost that can possibly be obtained may be completely nullified by errors in watering and general management. Without using soil of a proper character success cannot follow, but the after treatment of the plants is the all-important part to be studied. As *Chrysanthemums* have such a short season of growth, and so much has to be done in a few months, they must have all the support they can appropriate, and to this end the composition of the soil is not of so much importance as after-feeding. The soil, then, while it contains food must be regarded as a store for additional food that is required and given from time to time, the store or larder all the time remaining sweet. It is a mistake to suppose that soil must be prepared and stacked for six or twelve months previous to using it, and I am glad to see that old practice is fast becoming obsolete. Soils differ so much in their nature and component parts in different parts of the

country that no absolute rule can be laid down as to what mixture is the best. I will endeavour to make this part as clear as I can to suit the various localities, first describing the different ingredients used.

Loam, as it is called, is composed of the top spit of an old pasture, cut in thickness according to the depth of the fibrous roots of the grass; in some places 3 inches is not too deep, while in others 1½ inch is enough according to the time the pasture has been laid down. It should be cut about three months previously to being used, or just long enough for the grass to decay, and prevent it growing through the surface in the pots. If the turf is light in character, and cut from where the land is of a sandy nature, ground oyster shells should be added, which have a portion of lime in them; but if the turf is taken from a district where chalk and limestone abounds add more charcoal and wood ashes in lieu of oyster shells. Charcoal is of great assistance in keeping the whole soil porous and acting as a storehouse for ammonia. If the turf is of a retentive character remove the fine soil by means of sifting through a fine sieve, as this fine soil tends to prevent a quick passage of the water when applied copiously, as it must be during hot weather in summer. Those growers having a rather light soil at disposal are much more favoured than those with soil approaching clay, as where the former kind is used the moisture escapes from it quickly, consequently feeding can be more frequently and safely carried out; therefore due care should be given to making heavy soil lighter.

Manure is the ingredient second in importance, and must be applied in some form or other. Well-decomposed cow manure is often recommended, such as falls to a powder when moved. This is wrong, because what beneficent properties can there possibly be in manure when decomposition has entirely taken place? Simply the shell is left which held the goodness; and it is the same with decomposed hothed manure, as the violent heat caused by the mass during fermentation dissipated the ammonia, and it is the ammonia which should be preserved for the benefit of the plants. I do not approve of cow manure in any shape. I consider it injurious when used with soil of a heavy character, it being too close in nature, and far too binding with other parts. The best manure is that prepared as if for a Mushroom bed, excepting that the straw should be taken out. It is sweetened, yet most of the ammonia is retained. This is the best manure to employ for soils of both a light and heavy character. Fine ground bones, as well as dissolved bones, are also beneficial when used in proper quantities. Soot is a powerful and a beneficial agent when cautiously applied, but when used excessively it is most injurious. I have seen plants which had lost all their leaves and others presenting a very sickly appearance through the misuse of soot. Lime in a quick state is useful for the

destruction of worms, the quantity used being in accordance with the district from where the turf was obtained. In mixing the soil a handful sprinkled on occasionally is all that is required for the purpose. The sand used should be coarse and gritty, that which is fine and liable to bind together the other materials should be avoided. Clean coarse silver sand is the best. Leaf mould in a half-decayed state is an excellent ingredient to add, particularly in the case of heavy retentive soils, as it is of great assistance in keeping the whole mass porous.

Having described the materials to be used, let it be understood, for the final potting, as in a previous note I indicated the soil best adapted for them in the younger stages of growth, I will now give as near as I can the quantity of each component part. To be precise I purpose taking the two cases in hand—heavy and light soils, and give the details required in each composition. Taking the former kind first, I would advise as follows:—Three parts of fibry loam broken up roughly, the fine soil taken out, retaining nothing but the fibrous parts, one part of horse manure, one of half-decayed leaves, one part of coarse silver sand, a quarter of a part of fine ground bones, and the same quantity of dissolved bones; one part of charcoal and wood ashes, the former to be used in a rough state, adding a 6-inch potful of soot to 4 bushels of soil.

Where the loam is light in texture use four parts as fibry as possible; to this add two parts of horse manure, one part of leaves, half a part of coarse silver sand, the same quantity of ground oyster shells, half a part each of fine crushed and dissolved bones, and the same quantity of soot as advised for the heavier soil, thoroughly incorporate all the parts together, using all that can be so used in a rough state, as the action of mixing reduces the parts considerably, therefore if the turfy loam and other ingredients be chopped small at first, the mass becomes too fine through frequent turnings. The compost should neither be too wet nor too dry, but just a “happy medium,” for if wet it is liable to run together too closely, and if it is too dry it cannot be made sufficiently firm in the pots.

RIGHT AND WRONG METHODS OF POTTING.

Chrysanthemums must be potted in a proper manner, or it is useless to expect flowers of the finest quality, therefore this part of their culture should be carefully considered. To the inexperienced growers potting Chrysanthemums may appear of no greater importance than potting any ordinary softwooded plant; but high-class blooms cannot be had from plants with soft sappy stem which are the results often of improperly performing this part of their treatment. When they are potted loosely they grow strongly and produce large leaves, but are devoid of that solidity which is

essential to success. The soil should be rammed into the pot very firmly with a blunt stick 1 foot long and $1\frac{1}{2}$ inch in diameter at one end, the other end being cut wedge-shaped. In soil of a light character it is hardly possible to pot too firmly, but it is not so necessary with heavier soil, as the water will not percolate so freely, and should the drainage become defective trouble may ensue through the soil becoming waterlogged. When the plants are potted firmly the growth is not so rapid early in the season, but it is rendered solid and firm as growth proceeds, and is more likely to mature in a wet autumn. Let it be understood that I am now referring to the final potting.

As I stated before, the pots should be perfectly clean; the crocks used for the drainage must also be free from grit. For the largest pots 2 inches of drainage is not too much, and it should be carefully laid in. The piece placed over the hole in the pot should be much larger than the hole and quite hollow, not flat and close-fitting. Other pieces coming next should be smaller and properly packed around the first piece, finishing off with a layer of smaller pieces. Over the drainage place a layer of the roughest parts of the compost to prevent the fine soil running down amongst the drainage, thus preventing the free egress of water. The best material for this purpose is pieces of thin newly cut turf, as this does not decay so soon and is not so liable to clog the drainage. In the case of the heavy soil sprinkle a few leaves, charcoal, and a table-spoonful of soot over the pieces of turf. If the soil is light the soot only will be required. The soil should be firmly rammed down previous to placing the plant thereon. Do not cover the top of the ball of soil attached to the plant too deeply. Give a little to cover any surface roots that may have become bare through watering, but leave a depth of about $1\frac{1}{2}$ inch to allow space for water and top dressing at a future opportunity. If the soil is moist no water will be required for two or three days; after this time a good soaking may be given.

TRAINING PLANTS FOR PRODUCING LARGE BLOOMS.

Various are the methods of training *Chrysanthemums* for the production of large blooms. In referring to the different systems practised, my remarks will be strictly confined to those plants which are grown specially for supplying large blooms either for exhibition or home decoration, not to trained specimen plants. Some growers top the plants when 4 inches high, the point of the shoot being pinched out. This induces the production of two shoots, which are tied to a stake and allowed to extend till the first natural "break," and from this break two other shoots are carried

up. Some persons consider this topping induces a dwarfer habit, but that does not always follow, as I have seen plants grow quite as tall when treated in this manner as when grown under other systems. Other cultivators top the plants when 8 inches high; three branches are produced after this topping and trained to separate stakes, all axillary growths being removed as fast as they appear. Flowers produced by this method are generally large, but owing to the wood not being thoroughly ripened, consequent on the late topping, and the growths being behind their natural stage, are not of first-rate quality, lacking depth and solidity. In order to reduce the height of their plants some growers in the early stages starve them by withholding water—giving much less than they properly require, and also by allowing them to become root-bound previous to shifting into larger pots. Flowers produced by such plants are rarely of the first order of merit, having the defects mentioned in the previous case. A plant rendered constitutionally weak by starvation cannot produce perfect flowers.

Many plants are grown with one stem only, not topping them at all, but allowing them to attain the customary height of each variety. All other conditions being favourable good flowers are produced by such plants, but I consider the practice wasteful, as one plant will produce more flowers of equally good quality. It moreover often happens that the points of the shoots are broken by winds, rain, and frequently by birds alighting on the points. When such accidents befall single-stemmed plants, they may be, and often are, spoilt, the time and attention bestowed being then wasted. I must make an exception in the matter of topping in favour of Eve and its sport Mabel Ward, which is the exact counterpart of its parent in growth. Good examples of these are seldom seen. The best way to insure good flowers is to grow the plants with one stem till the middle of May, then top them, select three of the best shoots resulting, from these three branches rub off all side shoots as fast as they appear, and "take" the first buds produced, which are early "crowns." As a general system it is best to allow varieties to assume their natural habits, the growth is then solidified, and all the wants of the plants met at the proper time. The plants are not topped at all, but allowed a free uninterrupted growth until the first natural break, which sometimes occurs about the middle of May or early in June, according to the time cuttings were struck early or late. Some varieties are earlier in their first stages of growth than others, and some, notably Madame C. Audiguier, grow 4 feet high before they break, while some others do not grow more than 1 or 2 feet high before the first bloom bud is formed. No absolute rule can be laid down as to the time of the first natural break; when it does occur the bloom bud must be rubbed out, and three of the strongest shoots selected. These must be securely tied to a stake as they grow, and as fast as side

branches are produced they must be taken off, retaining only the three shoots selected at the first break. At the point of each branch flower buds will form in due time, commencing early in August and continuing throughout September. Until the buds are selected which are to produce the best flowers all other buds and branches must be taken off as soon as this can be done without damaging the stems or points of the main shoots, thus concentrating all the energies of the plant to the three stems as selected at the first break.

STANDARDS.

Chrysanthemums grown as standards are useful for the decoration of the conservatory when placed in suitable positions on the floor. They are not so frequently grown in this form as in others, owing to the time and attention they require, and also because many do not approve of such close training as is required to produce the specimens. The varieties specially adapted for growing in this form are not numerous, the incurved section being most suitable, and I give the names of some of the best. For the production of good standards the strongest cuttings should be selected early in December, and struck in the manner that has been previously recommended. In all stages great care should be taken that they do not become drawn up weakly. As soon as the plants are well rooted, shift them into larger pots and place them in cold pits or frames. When all fear of frost is past—which in the south of England is usually about the second week in May, and in the north towards the end of the same month—care should be taken to place them in such a position out of doors that a light covering can be thrown over them should frost occur, which would otherwise seriously cripple the points of the shoots.

About the 1st of June they will require their final shift into 11-inch pots, using the same kind of soil as before advised. The position selected for their summer quarters should be thoroughly exposed to the sun and air, but sheltered from east and south-westerly winds. Plunge the pots about half their depth in ashes, which keeps them firm and the roots cool during a hot summer. Exercise great care to prevent their being blown about in windy weather, as the roots are easily damaged by the continual rocking backwards and forwards of the plants. Three stakes firmly driven into the ground in triangular fashion, and connected to the stake in the pot, is a good system. Only retain one stem, and when this reaches the desired height—3 feet, or 3 feet 6 inches—it should be topped. If the plants grow to this height before making their natural first break, so much the better; but if a break occurs earlier the shoots must be reduced to one, which is allowed to grow till the necessary height is reached. The topping induces other

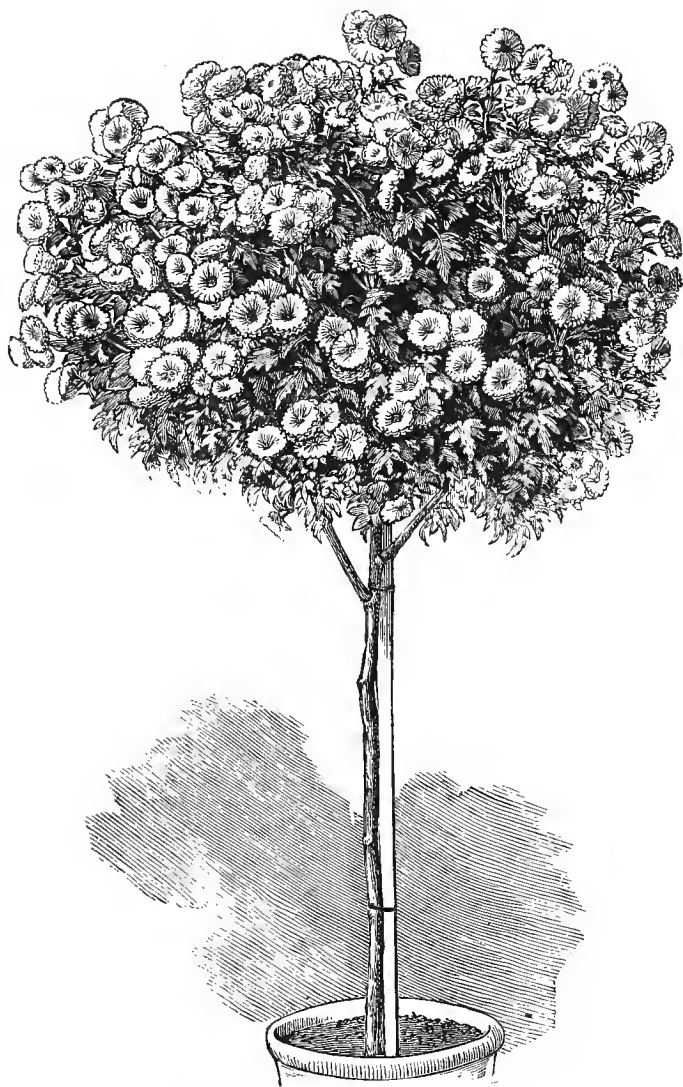


Fig. 3.—Standard Pompon Chrysanthemum.

side shoots to form, which make the foundation of the future head. Reduce these shoots to four, and when these have grown 6 inches long again top them, continuing this process till the requisite number of branches is obtained to cover the trellis ; but topping should not take place later than the middle of June. The number of flowers each plant is expected to produce must guide the cultivator as to the number of times the shoots should be topped ; it is a mistake to attempt to produce too many blooms on one plant. It is far better to limit the number, and have them of better quality. Plants of the small varieties of incurved kinds, such as Mrs. G. Rundle if the heads are grown, say, about 2 feet in diameter and about 1 foot 4 inches in depth, fifty blooms will be enough ; but in the case of White Venus thirty flowers on heads the same size would be ample. Of course, the plants can be grown much larger, but it should be remembered that the greater number of flowers the smaller they will be.

The shape the plants are to assume must be determined, and the sizes I have given answer very well if the form is convex. Bend pieces of strong galvanised wire of the length named over, fastening each to a circular ring as the foundation, and securing all to the top of the centre stake. Fix the framework from the bottom wire to the centre stake with the aid of two pieces of stout wire stretched across from one side to the other, as this prevents the head swaying about. Commence training the branches as soon as they are long enough, as the foundation is more easily formed at this stage than when the shoots are longer and harder. When the bloom buds are formed, which will be early in September, disbud to one on each branch, and when they are swelling give the plants their final tying, as the shoots which are bent have plenty of time to right themselves ; in this way severe training is not so easily detected as it is if done a few days before the plants are in bloom. Supply them freely with water at the roots during summer and at all times, and in the evenings of fine days freely syringe the foliage. As feeding the plants will be specially dealt with later on, it will not be necessary to dwell upon that point now. House the plants, and treat them the same as those grown for other purposes.

The varieties I have found best for the purpose are the following :—Mrs. G. Rundle, Mrs. Dixon, George Glenny, Aureum Multiflorum, Julia Lagravère, Venus, White Venus, Mrs. Haliburton, Prince of Wales, and Dr. Sharpe.

Several varieties may be represented on one head if required, by grafting. Skilfully trained examples are occasionally seen in which blooms of the varieties are shown in concentric circles—the lower tier, say, Mrs. Rundle, the next Prince of Wales, then Mrs. Dixon, Venus, and George Glenny, with a central terminal flower of say Princess of Wales. Some of the best specimens of this nature

have been exhibited at Walton-on-Thames, and the method of grafting has been described as follows by Mr. G. Masters :—

“If plants are wanted with stems $2\frac{1}{2}$ feet high growth should be encouraged until the plants are 3 feet in height, then pinch out the tops; leave about six eyes at the top to form the head, removing the others. When the top shoots have grown about 6 inches cut them off 2 or 3 inches from the stem; then take cuttings (scions), cutting the ends in the form of wedges, and insert them in the severed shoots of the prepared plant, securing them with wool or bass. Keep the plants in a cool house, and sprinkle and shade them until the union is effected, when they may be removed to the open air. Grafting may be done as soon as the plants are ready, which ought to be by the middle of May, so that the grafts can be stopped two or three times and thus form a fine head. It is important that the plants are in a healthy free-growing state when they are grafted, and that the work be done quickly yet carefully. Care should be taken to graft varieties that flower as nearly as possible at the same time. Every shoot may be grafted with a different variety if desirable.”

Pompons are well adapted for standards, and are excellent for both exhibition and home decoration. The method of training is often too formal to be agreeable, the growths being closely tied down, showing the bending and lacing of the stems, which should never be visible. Mr. J. Lyne of Wimbledon has made a welcome departure from the lacing system. The method he adopts in forming the heads is to continue pinching the shoots as soon as two leaves are formed till the 31st of July, then let them grow as they will. The result is seen in the engraving (from a photograph), the plant represented on page 25 being grown from a cutting inserted early in March; but as a rule Mr. Lyne recommends their being inserted in December. The varieties found suitable for this purpose are Rosinante, Dick Turpin; White, Golden and Lilac Cedo Nulli, St. Thais, James Forsyth, Madame Marthe, Golden Madame Marthe, Sanguineum, Souvenir de Jersey, Bijou d'Horticulture, and Lili-pupian.

SPECIMEN PLANTS.

Chrysanthemums grown in specimen form find many admirers, and exhibitions would lose much of their attractiveness if well grown and skilfully trained plants were absent, despite what has been said against them. They are not useful for cutting purposes, as a partial loss of the blooms spoils their appearance, but where they can be conveniently arranged they have an imposing effect. There are two methods of producing specimens; one is growing them to a large size, say 5 feet in diameter, with 200 blooms on each plant: the other is limiting the plants to about 3 feet in diameter, with from thirty to fifty blooms of high-class merit, quality being the first consideration. Plants of this type are much more desirable than those grown for mere size, as the quality of the flowers must then be a secondary consideration, and plants

unduly "stretched out" are gaunt and unsatisfactory. Medium-sized and not over-trained plants, remarkable for large deep green foliage and grand blooms, are the most meritorious, and are certainly the best for general decorative purposes.

For producing large specimens cuttings should be taken the first week in December, striking them in the way previously recommended. Take them from the handlights as soon as possible, and arrange them on a shelf close to the glass to keep them sturdy. By the middle of January they will be about 4 inches high, according to the variety, some sorts growing taller and quicker than others. At this stage they should be topped, just taking off the point of each plant. This induces the production of side shoots, which form the basis of the future specimen. When the pots are fairly filled with roots shift the plants into 4½-inch pots, using soil as previously described, returning them to their former position on the shelf near the glass in a cool house. As soon as the roots reach the sides of the pots place the plants on ashes close to the glass in a cold frame or pit, and protect them from frost, keeping them rather close for a few days. When the weather is favourable ventilate freely, and on fine days remove the lights. Before the plants become root-bound shift them into 6½-inch pots. As soon as the shoots have grown 5 inches long top them again. About the middle of May they should be placed out of doors in an open position safe from strong winds, but where they will have the full benefit of the sun and where they can be covered with some light material in the event of a frost occurring.

About the first week in June the plants will require their final shift into 12-inch pots, and about the middle of this month they must have their final topping. Plunge the pots half their depth in ashes. This prevents the soil drying quickly and keeps the plants firm, as if not secured in some way they are liable to be blown over in exposed positions. Attend carefully to watering, never allowing them to become dry at the roots, or the foliage will not be retained in that fresh healthy condition which is absolutely necessary in well-grown specimens. Syringe the plants in the afternoon or evening after bright days for refreshing them and keeping the foliage clean. If green fly attacks the points of the shoots dust with tobacco powder, and if mildew appears dust with sulphur. Place a stake to each shoot, which prevents their being broken off by wind or accidents. By this time they will be growing freely, and towards the end of July will have a large number of branches, some of them 2 feet long. At this stage they must be got into position. Commence by tying the branches out, having in view the size required, depressing them as may be desirable. Manipulated at this stage the branches bend more easily than they do later in the year, righting themselves much better, and when the plants are in flower bent stems are not so apparent, as training is

done at a later stage. Bending the branches induces them to break into growth more freely. The plants make a natural break, forming a flower bud, about the middle of August. The branches produced from this break will each show a flower bud about the middle of September. These are the buds which should be retained



Fig. 4.—Specimen Chrysanthemum.

for the production of the flowers. As soon as they are large enough to handle all other buds must be removed, retaining only the centre one. When the huds are swelling the plants must have their final tying. Thin stakes painted a colour which most re-

sembles the branches and leaves are the best, as they should not be obtrusive. Secure the branches carefully to the stakes, leaving space for the stems to swell, as they thicken considerably at this stage. When in bloom the plants should be from 2 feet 6 inches to 3 feet high, pot included, the centre of the plant slightly rounded.

The plants should be housed according to the variety, be it late or early. Seven weeks for the late varieties, and a month or five weeks for others, will suffice previous to the time for flowering. Place the plants as close to the glass as possible, giving abundance of air and sufficient fire heat to dispel damp in wet or foggy weather. Feeding *Chrysanthemums* will be treated in a special article.

To grow specimens of the type represented in the engraving (fig. 4) the cuttings should be struck at the same time as the others, and the plants treated the same except in a few details. The pots need not be quite so large for flowering them in, 11-inch pots being ample size. The plants should be topped three times, the last time about the middle of June. The branches should be tied down a little earlier than for the dwarfer and larger plants, and it is important that the lower parts of the stems be bent, securing them to notched sticks, which can be pressed down from time to time for regulating the height of the branches. Bending and twisting the upper parts of the stems is a great mistake. Not a sign of this should be visible, but each branch should appear to come straight from the centre of the plant in a natural manner, and support a handsome bloom good enough to be arranged in a stand of cut flowers. Many branches are not required when the plants are grown under this system; therefore, at the natural breaking of the plant in August the shoots should be disbudded to the number required, thus causing those retained to be of superior quality, with robust foliage and eventually supporting grand blooms. Feeding and housing the plants should be carried out in the same way as the others.

The engraving is from a photograph of a small yet admirably finished plant grown by Mr. Hall of Brixton.

BUSH AND DECORATIVE PLANTS.

Where quantities of flowers are required for cutting, the bush method of cultivation is recommended, especially to amateurs, as a good show of blooms can be had in a small space. The plants not being tall are also well adapted for greenhouses or arranging in certain positions in larger conservatories. Flowers can be had later in the season by growing two batches of plants. From the middle

of January to the same time in February is the best time to strike the cuttings. When the plants are 4 inches high top them for the production of side branches, shifting as required before they are at all root-bound into larger pots, and keeping them stocky in growth; 8-inch and 10-inch pots are large enough to bloom them in, using the largest pots for the strongest growing. One topping is enough for some of the plants, while those required to be grown larger should be topped again when the shoots are 5 inches long. If a later batch of plants is required strike more cuttings in March. When the plants are placed out of doors do not allow them to touch each other, as the more air and space each one has the dwarfer it will be. Great care must be exercised in watering the plants, as much depends upon the quality of the foliage in a decorative point of view.

For the smallest plants three or four branches are sufficient to retain from the first topping, but in the larger size about eight is a fair number and sufficient to produce large bushes. If three shoots are produced from the first topping a dozen will spring from the second. Select from these the number required, and tie them securely to stakes. At the natural break of the plants in August many more shoots will be produced; these must be disbudded to the requisite number—about twenty-four on the large, half that number on the smaller plants, and from these numerous side shoots will grow and bloom. In September the flower buds will appear. If a few larger blooms are required take off all the buds except the centre one on each branch, but where a mass of flowers is preferred there should be no disbudding, and the stems will be clothed with flowers in abundance. After the central flowers are cut others are produced by the side shoots in succession. The plants should be housed in batches, allowing some to remain outside till severe frost compels their removal. Plants grown under this method require free ventilation, but not so much fire heat to prevent the flowers damping as those grown to produce large blooms. Place a stake to each main stem, or one strong stake in the centre of the plant, to which the branches can be tied loosely. Where the varieties are naturally of dwarf habit this answers very well; but in the case of taller kinds one stake to each branch makes all secure.

POMPONS FOR LARGE BLOOMS AND BUSHES.

Pompon and Anemone Pompon varieties of *Chrysanthemums* are particularly adapted for amateurs whose space is often of a limited nature. They can be grown quite dwarf, and their freedom in flowering renders them specially useful for cutting. Opinions differ as to the manner in which the cut flowers should be staged for exhibition—whether in bunches of three blooms, one on each spike, supported 3 or 4 inches above the stand to show the foliage, or in bunches

comprising an undefined number of flowers without any disbudding. The former I regard as the more satisfactory, for under what is termed the "big bloom method" the real character of the variety is brought out both in size, form, and colour. The foliage too is much better, which enhances their appearance; and in staging for exhibition a much more uniform stand can be obtained than by irregular-sized bunches. It is much easier also for judges to determine the merits or demerits of a stand when an equal number of blooms are staged in all stands.

Where the plants are grown solely for home decoration, and quantity of flowers is the chief object, the bush method of cultivation is the one to be adopted. To grow the plants for the production of large blooms for exhibition the cuttings should be inserted in single pots towards the end of December, shifting and transferring to frames as required. Do not top the plants, but allow them to grow till the first break occurs, when four or five of the strongest branches should be selected, removing the others, also all shoots as fast as they appear from the main stems. Should a second break occur by the formation of a flower bud early in August, the bud and the shoots must be again taken off, retaining only those branches which were selected at the first break. If the break occurs during the last days of August rub out the shoots then made and retain the flower bud formed at the end of each branch. These will produce large blooms if all other details are properly carried out. Pots 8 inches in diameter are quite large enough for Pompons, the soil and manner of potting to be the same as for the other sections. House the plants from five to six weeks prior to the time they are required to be in bloom, placing them in a light position as near the glass as possible.

There are two methods of growing Pompons as bush plants—tall and dwarf. Where suitable places are available I prefer plants 4 and 5 feet high, as their long branches of flowers are much handsomer than those on dwarf plants, which are, however, valuable for low houses and special positions and purposes. The middle of January is soon enough to take the cuttings. As soon as the plants are 4 inches high top them, and from this topping several other shoots will spring. Those that are intended to be tall plants should have three of the strongest branches selected, which should be allowed to extend, retaining all side shoots. Do not top them again. Buds will form in September, and all may remain to flower. For producing dwarf plants top when the shoots are 4 inches long, and continue the practice till the first week in July. Secure the growths to prevent breakage by wind, and when the flower buds are formed at the end of September tie out the branches according to requirements and consideration of the position the plants are intended to occupy when in bloom.

NATURAL-GROWN PLANTS.

In a treatise in which I hope to touch on all matters connected with *Chrysanthemum* culture I should like to express my opinion on so-called natural-grown plants, not with a view of encouraging their growth, but simply to define what is really a natural-grown plant. The term is, I fancy, applied in many instances in a wrong way. What I consider natural-grown plants are those grown from cuttings, never topped, the shoots not thinned, nor any flower buds taken off. I do not think anyone would care to grow *Chrysanthemums* in that way if they knew what would be the result. The plants would range in height from 2 to 10 feet according to the varieties and seasons; the blooms borne at the top would be small, many hollow-eyed and almost unrecognisable if compared with good flowers of the same varieties. If any person wishes to grow them in the way indicated, strike the cuttings any time during January, treating the plants in the usual way as to potting and watering, and when they make their first break in May, instead of thinning the shoots to a few as is necessary in other methods of culture, all should be allowed to grow, continuing this "natural" treatment at the next break also.

PYRAMIDS.

Chrysanthemums represented in the form of pyramids are highly effective when well grown, neatly trained, and profusely flowered. So-called pyramids are often spoiled by cultivators attempting too much, and instead of their producing really creditable examples of culture we see tall attenuated columns not half furnished. Though small free-flowering incurved varieties, such as the Rundle family, are amenable to this method of training, Pompons are the best, and when produced as represented in the engraving, which is from a photograph, they are certain to be admired. The specimen in question (Mdle. Marthe) was grown and exhibited by Mr. A. Harding, and may be taken as an example of skilful culture.

For perfecting good pyramids strong cuttings are inserted in November. The best possible growth is encouraged, and the plants placed into their flowering pots (8 or 9-inch) by the end of May. The leading shoot is topped at about 9 inches, the best shoot following being taken as a leader again, the side branches trained out regularly. A wire hoop about 18 inches in diameter is fixed at the base of each plant, supported by two crossed sticks affixed to the pot, a central stake of the requisite height being at the same time inserted. Smaller wires can be taken from the hoop to the top of the stake if desired; but good pyramids may be

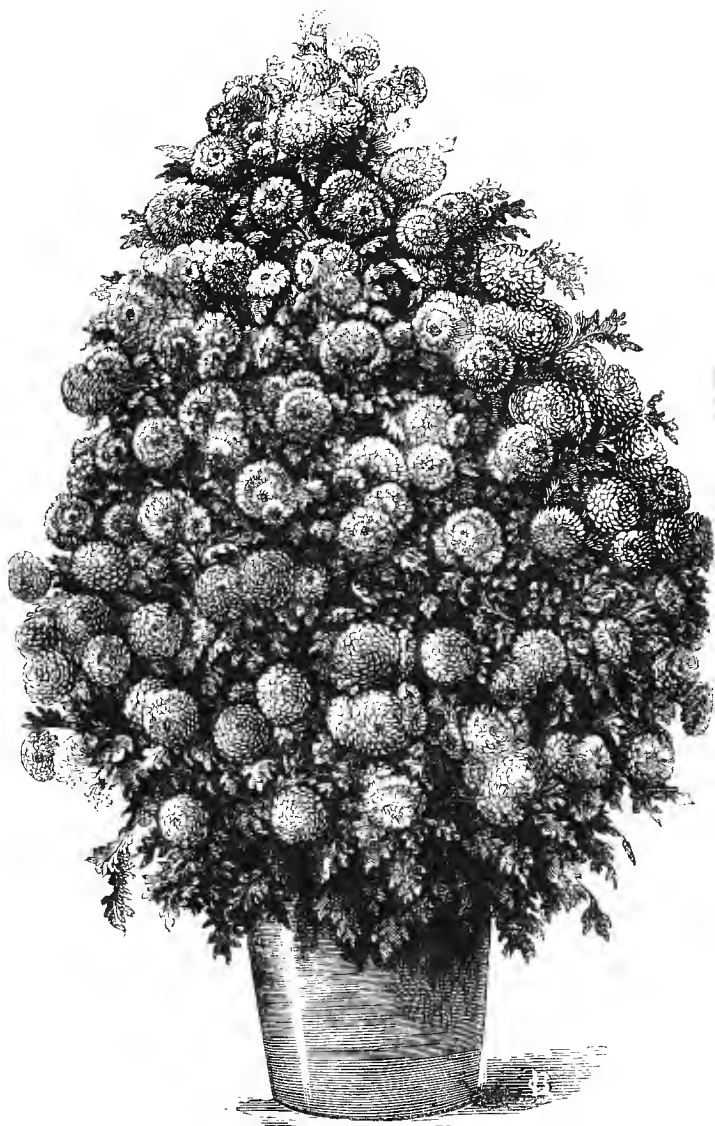


Fig. 5.—Pompon Chrysanthemum.

formed without by a judicious arrangement of the branches, securing them to the central stake and to each other. They must be topped as required for insuring a sufficiency of growths, the last time about the end of June in the case of the late-flowering varieties, the earlier sorts a fortnight or so later if all are desired to bloom at the same time.

As above indicated it is a mistake to attempt to grow the plants too large, it being far better to confine them to a fair size, say 3 feet high and 2 feet through at the base above the top of the pot. Continue to tie the branches loosely as they grow, as neatness in this form is necessary, and stakes cannot be used. When the flower buds show in September retain only the best on each shoot, and when these are swelling freely dispose them regularly, completing the tying as far as possible about the second week in October; then, if the plants are in the best of health, scarcely a twisted stem and no ligatures will be visible when the blooms are expanded, while the foliage will be dark, naturally disposed, and so dense that it will be impossible to see into the interior of the plant. If a pyramid can be seen through it is certainly imperfect.

CUTTING DOWN PLANTS.

The system of cutting down *Chrysanthemums* to render them dwarf and more suitable for decorative purposes has much to recommend it, especially in preparing groups for conservatories or exhibition, as it is seldom that naturally grown plants can be arranged so that they can be readily seen. To obtain plants for this purpose strong cuttings should be struck at the same time and in the same manner as previously advised. Do not top the plants, but train them with one stem. As they are mainly used for grouping, and as they are generally stood closely together when in bloom, 9-inch pots will be large enough for the final shift. If possible the pots should be of one uniform size, therefore after the cuttings are struck place them into 3½-inch pots, and then into those 5¼ inches in diameter, using similar soil to that recommended already, transferring the plants to cold frames as soon as they are ready.

About the 20th of May cutting down should commence with the late-flowering varieties, say for example *Boule d'Or*, *Meg Merrilies*, *Yellow Dragon*, *Grandiflorum*, *Princess Teck*, *Hero of Stoke Newington*, and *Cherub*; midseason varieties about the 1st of June; and the early-blooming varieties, such as *Elaine*, *Mrs. G. Rundle*, and *Prince Alfred*, should be cut down about the middle of June. None should be cut down later than this date if they are to be in bloom early in November. It is well to take into consideration the purpose for which the plants are required in determining the height at which they are to be cut. Dwarf-growing varieties best suited for front rows of groups may be cut down to within about 4 inches

of the soil, the others to 6, 8, and 12 inches. As they do not break so freely from the old wood as from the young, plants of small-flowered varieties which are intended to have more branches each should not be cut so low as the larger-flowering varieties.



Fig. 6.

Great care must be exercised in watering the plants after they are cut down; they do not require much water at the roots for some time. If they can have the protection of a cold frame so much the better, as they can then be protected from showery

weather. Syringe the plants once a day to assist the shoots starting, and if the sun be very hot at this time a little shade in the middle of the day can be applied. As soon as the shoots are long enough to determine if they are perfect, disbud to the number required; three branches suffice for most varieties, except the small-flowering sorts, which may have five or six. At this stage transfer the plants into the largest pots, and when rooting into the new soil remove them to their summer quarters, allowing them ample space,



Fig. 7.

as crowding quickly spoils their appearance, drawing them up weakly and ruining the foliage. Tie each branch to stakes separately to prevent their being broken or the leaves damaged by chafing during gales of wind, and as soon as the pots are filled with roots stimulants may be supplied.

The first buds produced on the shoots after cutting down should in nearly all cases be selected as best suited for producing

large blooms. They will appear from the middle to the end of August, and it will be soon enough if some sorts show their buds the first week in September, such as the Queen family. Sometimes a bud will show the first week in August. This is too early. In this case rub it out and wait till the next one shows, which will be about the middle of September. When the buds are selected take off all growth shoots, which are freely produced at this stage. Commence housing the plants the 1st of October, starting with the late varieties, and have all under cover by the middle of the month. Place them as near to the glass as possible, giving sufficient space to each plant to prevent loss of the foliage. Fire heat will be needed occasionally in dull weather to prevent the blooms damping. Thin wires are useful to support the stems when the plants are required for exhibition grouping, as they are less obtrusive than lath or hazel stakes. Another advantage gained by the wire supports over the wooden ones is that sometimes one flower does not come quite in the right place, whereas in this case the wire can be bent as desired.

The illustrations (figs. 6 and 7, see pages 36 and 37) show a cut-down plant and one bearing flowers, and will serve to render the preceding explanations more easily understood.

SINGLE VARIETIES.

Single Chrysanthemums are not grown nearly so much as their merits deserve, seeing how useful the flowers are for the decoration of vases, mixing so well as they do with Fern or other greenery. Now that the varieties are becoming numerous and the colours more varied a larger demand for plants is sure to take place. They bloom very profusely, and the flowers last a long time either on the plants or in a cut state. They do not require so much space or pot room as those of the larger sections. They have not been much seen at exhibitions owing to a want of variety in colour perhaps, and to the fact that the general style of growing Chrysanthemums for exhibition—viz., a few flowers on a plant to obtain size, is not the best suited for the growth of single varieties. Blooming in masses is the way they show to the best advantage. They are extremely useful when grown to flower later than the ordinary kinds, and are well adapted for growing in a dwarf state for room-decoration in vases; or even as dinner-table plants they are appreciated by some, and the bright-coloured varieties make an agreeable change during the dull season of winter.

The most effective method of cultivating them is growing the plants in bush form similar to that previously described, the cultural notes given under that heading applying equally well to the single varieties. Long spikes branching freely in a natural manner produce flowers in abundance; but where large individual blooms are

required the system of growing Pompons for large blooms is specially recommended.

For the production of small plants suitable for vases the following details should be observed. Plant old or young plants on an open space of ground, putting out those struck in January about the middle of May, tying the stems firmly as they grow to stakes to prevent breakage by wind or other accident. Do not top the shoots, but allow them to grow uninterruptedly, but in the case of the old plants thin the stems to say six on each; if more spring from the base remove them. Early in September, when the bloom buds are forming, take off the points of the shoots about 8 inches long, insert them in pots, say five cuttings in a 4½-inch, and nine in a 6-inch pot, using sandy soil with a free admixture of leaf mould, and give a good watering to settle them firmly in the soil. If the cuttings are not taken off the plants till the flower buds attain a good size they do not root so quickly, and consequently the leaves flag more when they are taken from the hotbed, for they require a gentle heat with shade to prevent loss of foliage. Sprinkle with tepid water every day in fine weather until they are rooted, then gradually harden off and place in a cool house as near to the glass as possible to keep them sturdy. Each plant will produce several flower buds; if the side ones are removed, retaining only the one at the extreme point of the shoot, this flower will be much larger than if all were allowed to grow. Appended is a list of some varieties to be recommended for growing:—Terra Cotta, Patience, Oscar Wilde, Charley Davis, Mary Anderson, Canariensis Improved, Mrs. Langtry, Mrs. J. Wills, Elsie Maud, Grace Darling, Miss Lulu Martin, Miss Davis, White Perfection, Oriflamme, Mrs. Deane, Gus Harris, Miss Ellen Terry.

SUMMER CHRYSANTHEMUMS.

With the advent of what are termed summer Chrysanthemums the season has been prolonged to a large extent; still it must be admitted that varieties which bloom so early in the season are not so much appreciated as those which are in season later when other flowers are scarce. Good blooms of some of the best sorts are desirable and well repay any trouble bestowed upon them. Particularly are they appreciated for the decoration of churches, for harvest thanksgivings where white flowers are always in demand. For conservatory decoration there is still a want of that variety of colour which is found in the larger sections. For herbaceous and shrubby decoration they are extremely useful, their habit of growth being in most cases compact, and as they bloom freely they render the borders where they are employed attractive at a season when many occupants of herbaceous borders are past their best. Good varieties for planting in the borders are Nanum, blush white,

very free ; *La Petite Marie*, white with yellow tint, very dwarf, *Lyou*, purple ; *Flora*, yellow ; *Madame Jolivart*, white ; *Mr. W. Piercy*, red changing to bronze brown ; *Anastasio*, magenta, very free ; *Fiberta*, yellow ; *Frederick Marronet*, bronze ; *Mons. Pynaert Van Geert*, Japanese, yellow striped bright red ; *Isidore Feral*, rosy lilac and golden centre ; *Madame Piccol*, rosy purple ; and *Salter's Early Blush*, tender rose. Cuttings should be struck in February, topped twice, potted in 4½-inch pots, grown in a cold frame, kept sturdy, and planted out in May, when no danger of frost need be apprehended. Water the plants freely during dry weather in summer, tie the branches neatly to stakes as growth proceeds to prevent them being broken by wind, and allow them to bloom as freely as they will. The following are some of the best sorts for blooming in pots in September and early in October :—*Madame Desgrange*, large white ; *La Vierge*, white ; *Mrs. Cullingford*, white ; *C. Wermig*, a primrose yellow sport from *Madame Desgrange*. Cuttings should be rooted in January in the ordinary way, topped once when 4 inches high, and allowed to grow with three stems, when they will branch again, this time selecting three additional branches for *Madame Desgrange* and its sport. The other sorts may have about ten branches in all. If these are allowed to produce one bloom each the quality of the flowers will be good, providing other wants have been attended to, such as potting as required, at last into 9-inch pots, careful watering and disbudding the flowers ; but if more flowers in number are preferred allow extra branches to grow from the natural break.

VARIETIES FOR WALLS AND BORDERS.

By following out a few simple cultural instructions many spaces of otherwise bleak walls may be made to look gay, and provided the weather is not too wet or frosty blooms can be cut that would put to shame not a few that are grown under more favourable circumstances, and staged at some of the leading shows. The main point is to grow suitable varieties. The reflexed sorts are best adapted for walls, for owing to the imbrication of their florets the water does not lodge among them so much. Next in merit come the reflexed varieties of Japanese and Pompons, which on account of their floriferous habit make a good show. Single varieties are also suitable, blooming freely and lasting in good condition a long time. A southern aspect is the best position for the plants, and if there is a wide coping on the wall so much the better, as this in a measure prevents the blooms becoming so wet as they otherwise would be owing to drip from the wall. If the wall is 5 or 7 feet high it will be an advantage, as larger flowers and more in quantity can be produced than on a wall not so high. We will presume then that the wall is 7 feet high, and large blooms and a quantity of smaller ones

are wished for. Procure early in April a sufficient number of plants which have bloomed in pots the year previously ; these are better than young ones from cuttings of the current year owing to the extra number of shoots produced at the base, and are better furnished with branches to begin with. Remove part of the old soil from the roots and plant them close to the wall at a distance of 3 feet apart. If the soil is fairly good add some manure. Should the soil be of a poor character it is better to replace it with some composed of loam three parts, and two parts of manure. Between each two large-flowered varieties plant one Pompon, which will cover the bottom part of the wall ; tread the soil firmly about the plants, and when they begin to grow water them freely. If the plants were of good size the previous year they will start into growth with many shoots. Select four of the strongest on each plant, removing all the others except the Pompons, which may have six growths. When the branches are long enough spread them out thinly and fasten to the wall with shreds and nails, continually securing them as growth proceeds. Do not top the branches. When the first break takes place select two of the strongest shoots on each original stem, or more if space will allow, some kinds requiring less space than others owing to the length of their foliage, taking off the remainder. From 4 to 6 inches apart is a suitable distance to train them from each other. Buds will be formed at the point of each shoot toward the end of August. The number required must now be determined, as one flower to each stem is all that can be depended upon when size is the leading question. It is wise to allow about three stems on each plant to produce a single bud, and from all other shoots remove the flower buds, allowing the plants to make another natural break. The result of this will be an increase of the branches and a production of a large number of blooms, as these new shoots will not require disbudding.

As soon as the roots have taken possession of the new soil apply liquid manure in a weak state. The drainings from the manure yard are very good for the purpose, increasing the strength when the bloom buds are formed. After a hot day thoroughly syringe the plants, this greatly assisting in keeping the foliage clean and in a healthy condition. If the wall is lower and large blooms are required the method of training the plants must be altered, and planting should be done in the same way, except that the Pompons must be dispensed with and the other plants placed 2 feet 6 inches apart. In securing the stems to the wall train them in a slanting direction across one another ; by this means long branches can be accommodated without their extending beyond the top of the wall. Thin the branches at the breaks, and select the buds as previously described ; but where quantity of flowers is the main object, and the wall not so high, top the plants when about 6 inches long, and

continue this topping till the end of June, laying in the shoots as space will allow. As showing the time flowers last upon plants grown at the foot of walls under the method described, at Swanmore Park they commenced to bloom on October 1st, 1885, and continued to do so till the 10th of December, when a severe frost coming quickly after rain put an end to them. In favourable seasons Chrysanthemums bloom freely when planted in the herbaceous or shrubbery borders, planting them according to the natural height of growth of each kind; but I do not strongly recommend this system, as a wet autumn spoils the blooms by damping, and a sharp frost in November disfigures them beyond recovery. Pompon and small-blooming varieties of Japanese and Incurved are the best for borders.

I append the names of some of the sorts I have found succeed for walls, and no doubt there are many others equally well adapted for the purpose. *Reflexed*.—Golden Christine, Pink Christine, Mrs. Forsyth, King of Crimson, Phidias, Progne. *Incurved*.—Refulgence, Golden Empress, Lord Alcester, Mrs. G. Rundle, Mrs. Dixon, George Glenney, Pink Venus, Othello, Jardin des Plantes. *Singles*.—Oscar Wilde, Patience. *Japanese*.—Dr. Macary, Bouquet Fait, Peter the Great, Elaine, Tendresse, Mons. Mousillac, Margot, Mdle. Lacroix, Harlequin, George Gordon, L'Incomparable, The Daimio. *Pompons*.—White Trevena, Snowdrop, Golden Circle, Nelly Rainford, Rosinante, St. Michael.

PLANTS AND BLOOMS FOR MARKET.

The demand for flowers has increased among all classes greatly during the last few years, and none excels Chrysanthemums either in a cut state or as dwarf plants for the market during the months of October, November, and December. They are grown in large numbers to meet the increasing demand, so suitable are they found to be as vase plants in towns where other plants at that time of the year are scarce, and those producing white flowers are most in favour. Madame Desgrange is an excellent variety for an early supply, followed by James Salter, deep lilac, and its white sport, Lady Selborne, which is much appreciated. Next comes Elaine, which in my opinion is the finest of all Chrysanthemums in purity of colour, substance, floriferousness, and duration of the blooms. Sœur Melanie is another grand variety, producing its white flowers freely. The best of the incurved section for cutting in large numbers is Mrs. G. Rundle, which, owing to the blooms being of medium size, can be used more conveniently for bouquets. George Glenney, pale primrose, is the same habit of growth as the former, and excellent for the same purpose where flowers other than white are required. White Cedo Nulli produces flowers in abundance,

and being of good shape renders it extremely useful for cutting. The above are some of the best for producing flowers in quantities.

Various methods are adopted in their culture, but the following is one of the best :—Strike the cuttings in the usual way in February, top them when 4 inches high, and transfer them into 4-inch pots. The best position at this stage is in a cold frame, taking care to prevent their being drawn weakly ; top the shoots again when they reach the same length. About the middle of May plant them out 3 feet apart on an open piece of ground, and if the soil is poor use some well-decayed manure. Should the weather be dry and hot during summer water the plants freely. Continue to top the branches till the middle of June : do not stake the branches upright, but allow them to lie on the ground. The last week in September cut around the plants with a spade, and in about a week lift them with a good ball of soil and plant as thickly as their size will allow in houses usually occupied in the summer with Cucumbers. The soil in which the latter had been growing will suit the Chrysanthemums, and save further trouble of preparing other compost. The advantage of not staking the branches upright will now be obvious, as houses like those named are generally deficient of head room ; the branches will better lie on the beds, and will be near the glass also. When planted give a good soaking of water to the roots, and syringe the plants in the afternoon for a few days, and if they show signs of flagging apply a light shade until they have recovered from the check occasioned by the removal. It will be well to disbud to one flower on each stem on some of the plants, and by allowing all the flower buds to remain on others flowers of different sizes are obtained, which are very useful in making up wreaths or bouquets. When the roots commence penetrating the new soil give liquid manure freely to the plants, and ventilate on fine days. Plants grown in this manner yield abundance of flowers with but a minimum of labour as compared with the method of keeping them in pots all the summer, and the houses which are devoted to Cucumbers during the summer are generally available for the Chrysanthemums just about the time they are required.

Mrs. G. Rundle is particularly well adapted for this method of cultivation, its habit of growth being moderately strong and branching freely. Elaine is not so suited for this form of culture as the preceding, its habit of growth being too tall and upright, but for the production of blooms it is a charming variety. The following course of treatment answers the purpose well. Strike the cuttings in January, top them when 4 inches high, and continue to do so until about the 12th of June ; early in the same month give them their final shift, placing two or three plants in an 11-inch pot. Each plant will have from twenty to thirty branches, from which remove all lateral growths as fast as they are produced, retain the first bud

formed at the point of each branch, removing all other side buds. If the flower buds are not thinned the blooms will be poor in substance and "hollow eyed," and in cutting the centre flower which opens first many side buds will have to be sacrificed, as they do not expand so early as the centre bud. Feed the plants liberally during the time the buds are swelling.

Snowdrop produces its flowers in masses, and owing to their small size they are very useful for buttonholes. It is best struck in February, topped twice, allowing all the stems to grow and perfect all its blossoms, 8-inch pots being large enough for this variety.

The best variety to flower in pots as a market plant is *Sœur Melainie* ; its habit is dwarf, it retains its foliage in good condition for a long time, it is very floriferous, and, what is of great importance, its blooms expand together, thus making it very effective as a pot plant. Strike some cuttings in February and more in March ; as soon as rooted shift them into 3-inch pots, placing them in a frame close to the glass, keeping the frame close for a few days. As soon as they are rooting freely into the new soil take out the point of the shoot ; keep them sturdy by ventilating freely. Continue to top the shoots of those rooted in February until the middle of June. Transfer them into pots 6 or 7 inches in diameter the last week in June, and by this time the shoots will have broken from their last topping. Those rooted in March should be topped continually till the first week in July, and when they have broken into growth again place them into their largest pots, by this means a succession of flowers is obtained. Another method of growing them is in this way. At the end of April or early in May divide the old stools or plants of last year's growth, failing these use young plants of the current years growth, place them out in good soil, allowing ample space between them, and about the 20th July take off the tops 5 inches long and insert them rather thickly in 4, 5, or 6-inch pots in a propagating case in a cool house in the same way as for cuttings early in the year, only in the present instance the temperature of the house is higher. Shade them from the sun for a few days till roots are emitted, gradually harden them and remove them outside on to a bed of ashes full in the sun ; treat them liberally by supplying liquid manure freely to the roots. When the bloom buds show colour support the branches either by placing one stake in the centre and tying the shoots to it in the same way as *Mignonette* or *Bouvardias*, or place a neat stick to each stem, which is of great assistance to this variety, as owing to the weakness of its peduncles the flowers have a tendency to droop, but if separate stakes are placed to each shoot the blooms can be supported, the plants will be 1 foot to 1 foot 6 inches high. Another way to treat them is as follows :—At the end of June peg

a few shoots down to the ground, when rooted take out their points, and when the first break occurs after topping cut them off and pot singly ; these in small pots make useful little decorative plants.

If plants of the Rundle family are placed out in the same manner as advised and frequently topped till the middle of June, about the first week in August take off the points of the branches 6 inches long, placing six or seven in a 5-inch pot, treating them similarly to the last named, except that the buds are reduced to one on each shoot, these will then produce pretty little incurved flowers on plants 9 inches to 1 foot high. Dr. Macary, lilac Japanese, is a variety well suited to this treatment. Elaine is not a good variety to grow as a dwarf pot plant, it quickly runs up too tall, soon loses its foliage and does not open its flowers simultaneously, which as a market plant is a defect, but for growing to supply cut blooms it is unrivalled. The three varieties of Cedo Nulli, Aigle d'Or, La Vieige, Patience, and Flame of the single sorts, and several Pompon and Anemone Pompons, are also suitable for cultivating as market plants. No doubt there are many others which are suitable also, but these are a few of the best, and the requirements of the neighbourhood with many other matters have to be considered before deciding upon two or three varieties to grow.

DWARF PLANTS.

The engraving (fig. 8) accompanying these notes represents a plant of Peter the Great 8 inches high, growing in a pot $3\frac{1}{2}$ inches in diameter, producing one bloom, which measured 5 inches across. Chrysanthemums grown in this manner are not so often seen as their merits deserve, and they are well worthy of what little attention they require in producing them. They further show how adaptable the Chrysanthemum is for various purposes of decoration. These miniature plants are well suited for indoor decoration in vases or for standing on the side stages of the conservatory, where dwarf plants only are required. Attractive flowers can be had from plants growing in pots $2\frac{1}{2}$ inches in diameter, but where larger blooms are coveted pots $4\frac{1}{2}$ inches across are better ; indeed, these are large enough for plants grown by this method for any purpose for which they may be required. From the first to the last week in August is the best time to take the cuttings. If they are inserted sooner the plants are apt to get too tall, and if taken much later the flowers are necessarily smaller. Where Chrysanthemums are grown for the production of large blooms some of the points are almost sure to be broken off by various causes about the time stated, as, for instance, heavy rains, high winds, and birds alighting

on them, shoots at this stage being very brittle. Such shoots should be formed into cuttings 4 inches long, and some may be

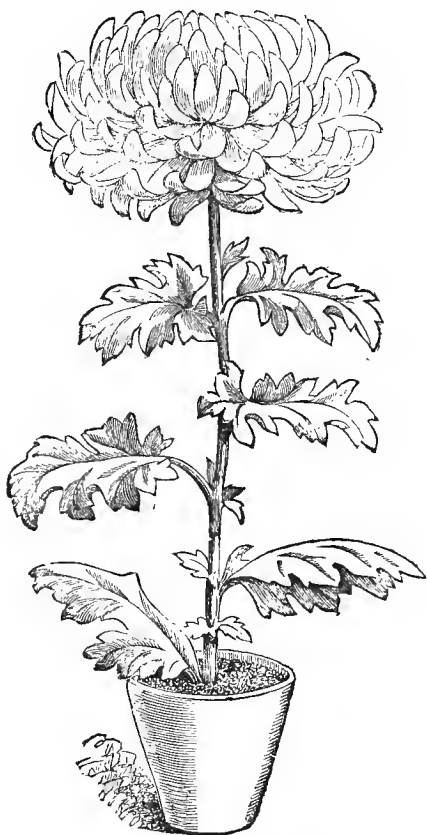


Fig. 8.—A Dwarf Chrysanthemum;

6 inches long. Dibble them firmly into sandy soil, using pots $2\frac{1}{2}$ inches in diameter ; water well to settle the soil securely about

the cuttings, plunge them in a gentle hotbed, shading them carefully from the sun, syringe the foliage every afternoon of fine days, and by keeping the frame nearly close roots will be formed in about a month, when more air should be afforded, increasing the supply until the plants will bear full exposure without flagging. The best position for them at that stage of their growth is on a shelf close to the glass in a cool house. If it is desirable to have large blooms shift the plants into pots of the size previously named, using rich soil and potting firmly. By this method cuttings can only be procured by chance, and perhaps the varieties available are not those which are specially required, but it is better to utilise those shoots broken by accident than to destroy them. Two other systems of producing cuttings I will describe. Where plants are grown by what is termed the "big bloom" method, instead of allowing three branches on each plant have four, and when the buds form on the points of the shoots toward the end of August the extra shoots can be topped and cuttings inserted. If the lower part of the same branch is cut off, the plant will be none the worse for growing four branches instead of three. Where a large number of dwarf plants are required the following is a good method of preparing the stock:—Insert cuttings in the usual way in January, pot the plants as required; do not top them, but train up four shoots from each plant at the first break, removing all other side branches as fast as they appear. Secure the plants to one stake during their growth. When the bloom buds form, as they will at the time named, cut off the points, insert them, and treat as advised for the others. Nearly all varieties are suitable for this method, preference being given to those which are not weak in growth, avoiding all that have slender peduncles, the stout erect growers being best, as they require no support when in bloom.

LATE CHRYSANTHEMUMS.

Chrysanthemums grown to produce late flowers are much appreciated; indeed they are by some more highly prized than the bulk of those blooming at the ordinary time—viz., the middle of November. To have them in perfection at the end of December and early in January the plants require to be specially treated. In the extreme south of England it is not so easy to have Chrysanthemums late as farther north. The seasons are much earlier in the south, consequently the plants come sooner into bloom. Much may, however, be done in furtherance of this object by selecting varieties which are naturally late in blooming. The selection given in a previous issue if adhered to will be found suitable. Nothing would be gained by naming more, as it is better to grow several plants of one sort which is good, than a few of many varieties merely for the sake of forming a large collection.

Cuttings of varieties intended to bloom late should not be struck till February, and the plants should be pinched three or four times to induce a dwarf habit and increase the number of flower stems. The last topping should take place about the first week in July. When bloom buds make their appearance towards the end of September disbud for one bloom on each shoot if good sized flowers are required ; but if quantity is the primary object do not disbud so freely. At this stage supply the plants liberally with weak liquid manure, occasionally watering with soot water or any other of the various stimulants now in use. If they can be protected from light frosts keep them out of doors as long as possible in preference to taking them inside, as keeping them out assists in retarding them. A thin covering of canvas stretched on poles at night will ward off a sharp frost. After removal inside admit air night and day freely when the weather is at all favourable. When developing their blooms if at all wet or foggy keep the atmosphere dry by applying a little fire heat, the flowers last much longer in a dry atmosphere than in one charged with moisture. Nine-inch pots are large enough to bloom them in, and the same compost as advised for other varieties is suitable.

ARRANGEMENT OF GROUPS.

To arrange a group of Chrysanthemums for home decoration is much easier than arranging one for exhibition ; for this reason—the former groups have not to undergo the critical scrutiny of men who have had wide experience in judging in this branch of horticulture by acting in that capacity at many shows where a variety of groups are seen in various forms. To arrange a group for exhibition in the best style requires some forethought and experience, even allowing that the necessary material is at hand which is required. I will describe what I consider is the best method of proceeding. The prevailing fashion is now to have the groups semi-circular or nearly so in shape. The one adopted by the Kingston and Surbiton Chrysanthemum Society is 50 square feet, being deeper in width than length. This Society may safely take the credit of being the pioneer of this method of growing and arranging Chrysanthemums, and some of the best groups that have been seen were staged in competition at its shows.

In preparing plants for the show a clear conception should be formed of what is required to effect the object in view ; and it is wise for young growers not having had any previous experience to first arrange the plants at home on a space similar to that assigned in competition ; the thread of the matter, so to speak, is then more clearly conceived, and the number of plants required more safely estimated. We will assume, then, that we are at the show and ready to commence operations. The allotted space to be filled is

marked out, no matter the size—large or small, the method of procedure is the same. Commence by placing the front line in position. Possibly some growers may think this is wrong, but it is not so, as may easily be found by experience. Very often an otherwise good group is spoilt by a defective front line. When a commencement is made from the back, and the plants happen to be tall, it is difficult to bring them down in due proportion without exposing too much the supports of empty pots and blocks of wood employed in the requisite elevations. Unless the plants are grown exactly to suit the purpose the plan of commencement of staging from the back is wrong; but if a start is made from the front an uniform range can be secured, and it is easier to build to a given height than one of imagination. As the work proceeds, if the plants are too tall they can go farther behind, and if too short raising is much easier accomplished without the supports being so much seen. If wire supports are attached to the stakes the work of arranging easily will be much facilitated, as any particular flower can be more easily brought into the required position. The height of the front row of plants for a group of the size named should be about 2 feet 6 inches or 3 feet, measuring from the ground; and the back row of plants about 6 feet, sloping evenly from this point down to the front; and from the centre line from back to front the plants should slope a little down to the sides of the group. This relieves the flatness otherwise caused by an even sloping bank from back to front. When quality has to be taken into consideration, as well as arrangement, the best means should be adopted of showing all the flowers on each plant.

The more variety in shape and colours of the flowers in reason the better. A really representative group of *Chrysanthemums* should consist of *Incurved*, *Japanese*, *Anemone*, and *Reflexed* varieties. The colours should be carefully blended. Never place two plants of one colour, or nearly so, together; decided colours, such as *Cullingfordi* and *Elaine*, go well together. Experience teaches this much better than any amount of written instructions, as perhaps the varieties which might be named in many instances are not available. The two varieties named will serve as an example. Some societies require special arrangements, such as all *Incurved* to comprise one group, and *Japanese* another; but to my mind the four sections named are really necessary to make a thorough representative group of forms and colours combined. The number of *Japanese* plants would naturally predominate, as by their light and graceful forms they are particularly adapted to this kind of work. The *Reflexed* varieties would be the fewest in point of numbers, owing to their somewhat stiff appearance. The newer kinds of *Anemone Japanese* are specially suited to this purpose on account of the peculiar formation and arrangement of the florets of some of the varieties.

PLACING PLANTS OUT OF DOORS.

Cultivators of Chrysanthemums must be guided in placing the plants out of doors by the locality in which they are situated ; as for instance, those who reside on a hill are not subject to late spring frosts to the same extent as others in low districts. In the south of England the plants may safely be removed outside the first week in May in a hilly district. A week later will be soon enough for the valley situations ; and in the northern counties towards the end of the same month will be as soon as can be considered safe. It often happens that frame room at this period of the year is not very plentiful, therefore the Chrysanthemums are hurried outside rather earlier than is advantageous to them. It is wise to place them in such a position that protection from frost can easily be afforded by using light tiffany or other suitable material. A position at the foot of a south wall considerably reduces the necessity for protection. Large numbers of plants have been crippled through neglect at this stage of their growth by the want of light protection. When the points of the shoots are frozen a serious check is given to the plants, from which it takes them a long time to recover. Strong east and south-westerly winds often seriously injure them, large numbers of leaves being broken by such gales as frequently occur at that time of the year, as the leaves at that stage are so succulent they snap off readily, therefore every means should be taken to reduce the chances of this to a minimum. Stand the plants on ashes or boards to prevent the ingress of worms, allowing sufficient space between the plants that they do not become drawn up weakly.

BEST POSITION FOR PLANTS.

Before placing the plants in the pots in which they are to bloom the position they are to occupy during the summer should be selected and provision made for their reception, so that when potted they can at once be removed to their summer quarters. In this selection cultivators must be guided by the convenience at their disposal. A situation open to the full rays of the sun and protected from east and south-westerly wind should, if possible, be secured. Placing single row of plants on the side of a path running east and west in the kitchen garden, or one row on each side of a broad path running north and south, answers admirably, as where such positions can be afforded the plants can be easily attended to in watering and regulating their growth during the summer. If such a position as the one described is to be used it is better to stand the pots just within the border or quarter clear of the path, as the continual watering with liquid manure is apt to

disfigure the gravel. Some growers plunge the pots, but except in the case of plants grown as specimens or bush plants for decorative purposes, where good foliage is especially desirable, I do not approve of the system, for the reason that in continuous wet weather, which often occurs towards the end of September, it is difficult to know when they require water. Excess of moisture at the roots is quite as bad as too little. Some people think *Chrysanthemums* cannot have too much water, but that is a mistake. I have seen plants denuded of a large portion of their lower leaves through supplying too much water to the roots. This is much more likely to occur in heavy retentive soil than in that of a sandy porous nature. If the pots on the sunny side could have protection from the rays of the sun in continuous spells of dry weather by boards placed in front of the pots, I think this would be a considerable advantage both to the plants in keeping the roots cool and a saving of labour in the application of water. It is better to stand the pots on boards, slates, or tiles when in their summer quarters than upon a bed of ashes, as the roots penetrate through the bottom of the pot into the ashes for some distance in quest of moisture. When the plants are removed inside these roots are destroyed, which causes a considerable check to the plants. Worms, too, are not liable to penetrate into the pots, as they are when the pots are standing upon ashes.

Provision must be made for securing the plants from winds. This is best done by erecting a trelliswork to which the plants can be fastened. There are various means of effecting this. In some districts cultivators have at command an unlimited number of stakes of various lengths and thickness. A framework composed of these can be put up which is strong, cheap, and as easily taken down and stored during the winter. The stakes will last two or three years. The upright stakes should be of sufficient stoutness to prevent the plants swaying about, and placed at such a distance as their strength and the length of the cross rails necessitate. For the tallest plants three cross rails are necessary, while for the moderately tall-growing varieties two are enough, and one for the shortest plants. Some growers stretch stout twine from post to post instead of the rails, but this soon becomes slack by exposure to the weather, and is not sufficiently firm to prevent the plants rocking to and fro. The strongest and neatest method is that of making a permanent structure of iron standards. The end standards should be $1\frac{1}{2}$ inch square, and be kept in position with iron supports 1 inch square. The intermediate posts may be flat iron $1\frac{1}{4}$ inch wide and three-eighths thick. To these connect stout galvanised wire as the annexed engraving represents, to which a coat of paint has been given to prevent damage to the tender shoots which sometimes occurs through contact with the acids used in galvanising the wire. Such contrivances are sometimes objectionable as a permanency; if so, they

can easily be taken down and stored away if the wires are fastened by bolts and nuts. When the plants are potted finally a stake of the height which the plants will grow should be placed to each ; some growers use one-quarter-inch iron rods made securely in the soil by means of three feet triangular in form. These have a neat appearance, but I think they are cold and not so good as those made of wood.



Fig. 9.—Arranging Plants.

When the plants are placed in position these stakes are tied to the cross rails, which make all secure. The branches produced at the first break are spread out, and two of them are tied to other small stakes which are fastened perpendicularly to the cross rails as shown on fig. 9 to the required height, and when the plants are

housed the two side branches are tied loosely to the centre stake. By spreading the branches out in the manner indicated better development of wood and foliage is secured by additional light and air ; by placing the pots 1 foot 6 inches apart ample space is allowed between them. If the plants are arranged all together the rows should run east and west, and be at such a distance apart that the shade caused by one row of plants does not fall upon the row behind ; to effect this a distance of 5 feet between the rows should be allowed. If the space at command is of the size to require several rows running parallel to each other the tallest plants must be arranged at the back with the dwarfer in front. Arranged thus all varieties can be accommodated to the best advantage. A knowledge of the relative height of each variety is necessary to effect this object, and for the guidance of the inexperienced I append a list of names with the height in feet. For the reader's observance of the growth and the better manipulation of each variety which has something peculiar to itself, it is a good plan to arrange all plants of each sort together ; note of each can be more easily made than when the plants are scattered. To a close observer this is not the least interesting phase in the growth of Chrysanthemums. The height differs somewhat according to the treatment they receive. The excessively tall growth made by some varieties goes a long way towards condemning the method practised for the production of large blooms by some growers. If equally good flowers could be produced under any other system of culture it would indeed be a boon in many ways, but my experience prompts me to say that it is not possible, Nature must have a share of its own way. The heights which I give are based upon my own experience and produced by the methods of culture I am describing.

LIST OF VARIETIES WITH THEIR HEIGHTS.

THREE FEET HIGH.—*L'Adorable*, *Val d'Andorre*, *Fleur Parfaite*, *Dolores*, *Mr. Cullingford*, *Miss Margaret*.

FOUR FEET HIGH.—*Golden Eagle*, *Golden John Salter*, *Hero of Stoke Newington*, *Lady Hardinge*, *Lady Slade*, *Le Grand*, *Princess Teck*, *Princess Beatrice*, *Barbara*, *Fleur de Marie*, *George Sand*, *Yellow Perfection*, *Emperor of China*, *Chevalier Domage*, *Triomphe du Nord*, *Albert*, *Simon Delaux*, *Sœur Dorothee Souille*, *Golden Dragon*, *M. Henri Jacotot*, *Criterion*, *Meg Merrilies*, *Grandiflorum*, *Bronze Dragon*, *M. Desbreaux*, *M. Moussillat*, *Madame de Sevin*, *Duchess of Edinburgh*, *Madame Deveille*, *Cullingfordi*, *Madame Goderaux*, *Princess Louise*, *Prince of Anemones*, *Angelina*, *Lady Talfourd*, *Miss Hope*, *Beauté des Jardins*, *Garnet*, *Père Delaux*.

FIVE FEET HIGH.—*Hiver Fleuri*, *Flamme de PUNCH*, *Dr. Macary*, *M. Astorg*, *Margot*, *Fabian de Mediana*, *Marguerite Villageoise*, *Souvenir de L'Ardene*, *Mdlle. Lacroix*, *Cloth of Gold*, *Christine*, *Christine Pink*, *Dr Sharpe*, *Distinction*, *Felicity*, *Golden Chrietine*, *Mrs. Foreyth*, *Mrs. Pethers*, *Gluck*, *Empress*, *King of Acemones*, *Baron Beust*, *White Globe*, *Empress Eugenie*, *General Bainbrigge*, *Guernsey Nugget*, *Jeanne d'Arc*, *Mrs. J.*

Crossfield, Mr. Brunlees, Mrs. Dixon, Mrs. W. Shipman, Nil Desperandum, Pink Perfection, Refulgence, Mdle. Cahrol, Fernand Feral, Boule d'Or, Mrs. Sharpe, Mrs. Haliburton, Prince of Wales, St. Patrick, Progne, Madame Bouchariat, Rosa Bonheur, Agrements de la Nature, Ethel, L'Incomparable, Magnum Bonum, L'Africaïne, La Nympe.

SIX FEET HIGH.—Golden Empress, Queen of England, Empress of India, Alfred Salter, Lord Alcester, Jardin des Plantes, John Salter, Lord Derby, Mabel Ward, Mr. George Glenny, Mrs. G. Rundle, Novelty, Cherub, Eve, Emily Dale, Mdle. Madeleine Tezier, Madame Clos, Triomphe de la Rue des Châlets, Striatum Perfectum, Ceres, Duchess of Albany, Dormillon, Elaine, Fanny Bouchariat, Jeanne Delaux, James Salter, Lady Selborne, Marguerite Marrouch, Mrs. Mahood, Acquisition, King of Crimsons, Album plenum, Bouquet Fait, Beauty, Bronze Jardin des Plantes, Lady Carey, Venus, White Venus, Oracle, The Sultan, Madame Thérèse Clos, Cry Kang, Mdle. Moulise, M. Delaux.

SEVEN FEET HIGH.—Sarnia, Soliel Levant, Peter the Great, Mons. Ardene, Japonaise, Daimio, M. Burnet, M. Tarin, Phidias, Lady Margaret, Balmoreau, Comtesse de Beuregard, Comte de Germiny, Baron de Prailley, Beverley, Golden Beverley, Lord Wolseley, Prince Alfred, Princess of Wales, Mrs. Heales, Mr. Bunn, Red Gauntlet.

EIGHT FEET HIGH.—Belle Paule, Sir Stafford Carey, Fair Maid of Guernsey, Le Sceptre Toulousain, Thunberg, Madame Bertie Rendatler.

TEN FEET HIGH.—Madame C. Audiguier.

SUMMER TREATMENT.

The most important point in the summer treatment of *Chrysanthemums* is regularity in attending to their various wants, strict and prompt attention to the smallest matters at the proper time being necessary to ultimate success. When the plants are finally potted and placed in their summer quarters, great care should be exercised in supplying them with water. A good soaking having been given to them after potting, no more water will be required for several days, except the weather be hot and dry. Applying water to the roots when not necessary is a mistake, as this tends to make the soil sodden; therefore wait until the soil is nearly dry before giving more at this stage. A gentle syringing after a hot dry day is of great advantage to the plants. The roots run more freely into the new soil when it is moderately moist than when heavily charged with moisture. As the roots progress and the sun gains power the plants require water twice each day, and a few of them possibly three times. The soil in each pot should be carefully examined before water is given; rapping the pots with the knuckles is the best guide, and if the same person attends to them always he soon becomes accustomed to the sound of the pots, and at once knows when to give water with benefit. It is wise in very hot weather to examine the plants three times each day, say early in the morning, again about midday, and once more in the evening. Where rain water can be had it should be used in preference to any other; but where it comes direct from wells or water companies'

pipes in a cold state, as is often the case near towns, means should be taken to expose it to the sun and air some time previous to using. Washing soda, used at the rate of $\frac{1}{4}$ lb. to 36 gallons of water, previously dissolving the soda in hot water, softens it if allowed to stand twenty-four hours, and also acts as a stimulant to the plants. The notes on watering apply to the use of clear water only. The application of stimulants will be dealt with in a special article. Syringing the plants is a great promoter of healthy growth, and a preventive of insects. Syringing is best done in the afternoon or evening of a hot day. When the plants are numerous and placed in rows the garden engine is the best instrument to use, and the water should be directed to the foliage with some force by going between two rows of plants and returning in the opposite direction; the plants then receive a thorough washing which is far better than a light sprinkling with the hand syringe. In cold sunless weather the plants should not be syringed or mildew may be encouraged, and it ought as far as possible to be averted. Incessant attention should be paid to tying the shoots to their supports as fast as they grow; neglect in this may cause much disappointment at a later period, the points of the shoots being so succulent are very liable to be broken by wind, heavy rains, and other causes, thus the loss of these branches reduces the chances of success to a minimum. When the branches which are intended to produce the flowers are selected remove all the other side growths promptly as they appear. Allowing superfluous branches to remain weakens those that are intended to produce flowers, therefore pay strict attention to the removal of excessive growths; it is much easier to take them off when young than when they get hard.

INSECTS, MILDEW, AND DISEASES—REMEDIES.

Chrysanthemums are not troubled with many forms of disease or insect pests, like some other kinds of plants, owing probably to their hardiness; still they are liable to be attacked by a few enemies, but if these are attacked in turn as soon as detected, and treated as I will endeavour to explain, they will not cause serious trouble by their presence. Green fly is one of the most persistent and troublesome of insects; it attacks the points of the shoots in all stages of their growth, more particularly when the plants are young, often before the cuttings are taken from the old plants, and if a remedy is not applied the young leaves and points of the shoots are soon crippled. The best way to clean the cuttings from green fly before inserting them is to rub with the thumb and finger the parts affected in water. This does no harm to the cutting, and the enemy is washed away. Gishurst compound used according to the instructions printed on the boxes is sometimes used, but is liable to

injure the tender leaves. Fumigating the house with tobacco paper is of course quite certain to kill the fly, but it is not always worth while to fumigate a house, as perhaps a few of the plants only are infested. Tobacco powder sprinkled on the points of the shoots is the best way to remove green fly when the plants are established in pots; a good syringing afterwards cleanses them from both fly and powder. Black fly is sometimes troublesome to the young leaves on the points of the branches; it may be destroyed by dipping the parts affected in a weak solution of tobacco water, using a saucer to contain the liquid. Care should be exercised in bending the young branches, as they are very liable to snap off if bent too quickly in covering the leaves with the liquid. A leaf-mining maggot, similar to that attacking Celery, is often very troublesome in the spring and during June, when the plants are from 3 feet to 4 feet high. The maggot can easily be seen under the skin of the leaves, where it secretes itself and quickly destroys the tissues, giving a serious check to the plant. Hand-picking persistently followed is the only efficacious remedy I know; either squeeze the part of the leaf where the maggot is seen, or pick them out with the point of a knife; neglect this and the plants may be spoiled. Another enemy, like the Rose maggot, often causes much anxiety and loss by destroying the points of the shoots in August and September, when the flower buds are forming. Incessantly watching for and destroying the grubs by hand is the only means to remove these depredators. Earwigs are also troublesome when the flower buds are formed. Their favourite hiding place is among the young unfolded leaves. The tender flower buds are, however, their favourite morsels, and these they spoil by eating away the centre; but they cause far more trouble when the blooms are expanding, as they eat the florets, thus rendering the flowers shapeless. Search for them after dark with the aid of a lantern, and destroy them then, as they are not easily seen during the daytime.

Mildew is the worst pest the Chrysanthemum grower has to contend with. It makes its appearance in small spots on the leaves at any stage of growth, more particularly in damp sunless weather towards the end of summer. Brown sulphur, owing to its colour, is the least objectionable, and sprinkled on the affected leaves is the best remedy. This parasite attacks the under parts of the leaves, to which it is almost impossible to apply sulphur in a dry state; recourse must then be had to a liquid application. The plants are often badly infested with mildew when they are ready for housing. They should not be removed into their final position until the pest is eradicated. This is best done by laying the plants on their sides and syringing them, thoroughly wetting every part with the following mixture:—Place 2 lbs. of sulphur and 2 lbs. lime, which has not been slaked, in ten quarts of water, and boil for twenty minutes. For syringing on the plants use two wineglassfuls of the

mixture to four gallons of clean cold water. A syringe with the jet affixed, causing a single stream, is the best method of applying the liquid ; by placing the forefinger over the orifice the liquid can be directed upwards and spread over the plant where required. If a slight discoloration of the leaves follows from the sediment of the mixture it will not be injurious, but can be removed if desired by a vigorous washing with clean water.

The only disease which affects *Chrysanthemums* to my knowledge is the following :—In the months of August and September after three or four successive rainy days the leaves from the soil to about three parts of the way up the plants turn black. I do not know any name for this form of disease, but I have noted that where soil of a retentive character is used the disease is the strongest, thus suggesting that sluggish or defective root-action may be a cause of the evil ; therefore the only preventive I can suggest is to prepare the soil for the final potting in the manner previously described, thus reducing the chances of the disease appearing to a minimum. If no other course is left to the cultivator but to use a retentive soil it should not be rammed very firmly in potting, or the water will not pass away so quickly as is desirable. I have seen plants denuded of three parts of their foliage in a few days by this disease, and receive a serious check in consequence.

SPORTS AND FIXING THEM.

Chrysanthemums have a tendency to sport into various colours. Many of these when "fixed" are improvements upon older kinds. Some persons speak disparagingly of this method of obtaining new varieties, but I fail to see why they are not as good as those produced from seed. Many new forms of the Incurved section are procured in this manner, notably Lord Alcester. This I regard as one of the best varieties in existence, if not quite the best of the Incurved family, as it will produce more first-class blooms on a given number of plants than any other which I am acquainted with. It originated as a sport from Golden Empress in the hands of an ex-policeman in Somersetshire, who was fortunate in fixing the sport and distributing it amongst horticulturists. The present general system of growing *Chrysanthemums* for the production of large blooms is not favourable for increasing the number of new varieties by sports, as the side shoots are taken off the plants as they grow, and it is from these side shoots, when they are allowed to develop into flowers that the largest number of sports appear. The best method of fixing sports and obtaining a stock of plants of the sported variety is the following :—If one branch only produces the new bloom cut away all other branches, and remove the dead bloom from the "sport," but not the leaves ; turn the

plant out of the pot and lay it on its side in a propagating house or frame which has bottom heat, and cover the roots and branches with cocoa-nut fibre, burying the buds in the axil, but not the leaves. This induces shoots to break at each joint, and when these are long enough take them off as a cutting with a sharp knife, but do not cut too low, as that might prevent other young growths springing from the base. Insert the cuttings singly in small pots, using sandy soil, place in a propagating case with bottom heat, and attend to carefully with water and shade. Plants which have been thus established should produce flowers of the new variety. Some growers cut the stem into lengths, but these do not strike freely, and a very small number of plants can be raised in this manner as compared to the system of inducing new growth to start from the buds. It is advisable to strike all cuttings growing from the base of the plant carefully, marking them, as some may perfect flowers of the sported variety.

FIRST BREAK.

There is no exact time when the plants make their first break, as so much depends upon various causes—viz., variety, time the plants were struck, and the locality in which they are grown; all these tend to alter the date of the “first break.” If the plants were rooted about the time advised many will show their first flower during the early part of May and others early in June. Many plants are spoilt at this stage of their growth through want of attention, or in some instances a lack of knowledge to know how to treat them at this important period. The “first break” is caused by the formation of a flower bud in the point of the young growing stem, this bud causes other branches to start from the axils of the leaves below the point where the flower bud formed. On plants of some varieties as many as ten additional growths will spring from the one stem, and a lesser number from other varieties. These would all in due time grow and produce flowers, but the object of growing the plants to produce large blooms necessitates that the number of growths on each plant be limited to three. The annexed engraving, fig. 10, is intended to illustrate a plant having just made its first break. In the point of the shoot can be seen the flower bud. This and all other shoots which have dotted lines through them are intended to be removed; the three stems which show no dotted lines at the top of the plant just below the flower bud and above those branches which are marked to come out, are to extend their growth, and in time produce flowers. The shoots which are retained should as fast as they grow be carefully tied to the stakes, as represented by fig. 9, p. 52. From this time

all side shoots which spring from the main stem must be carefully rubbed out as fast as they appear. The removal of all superfluous



Fig. 10.—First Break.

growths concentrates the whole energies of the plant to the three stems retained until the next break takes place.

"TAKING" THE BUDS—CROWNS.

If there is one detail in the cultivation of *Chrysanthemums* for large blooms that is of more importance than any other it is "taking the buds." Some persons may think this means pinching off the flower buds, but that is not so; it is the removing the growth shoots which form around the flower bud. These shoots are caused by the formation of the flower bud in the points of the branches. These are taken off, thus throwing the whole strength, so to speak, into the development of the bud retained. Experience with the different varieties will only thoroughly teach beginners in their cultivation the proper time to "take" the buds. If the buds are not retained at the right time for each variety it is useless to expect flowers of first-class quality. It is not a particular day of the month that all buds must be "taken," but the state of each individual plant must be considered when the wished-for bud appears, therefore no hard-and-fast line can be laid down as to the time when every plant should set its proper bud. As a general rule what is known as the crown bud is the one selected for producing large blooms, but in some instances this particular form of bud will not produce the best results, as a difference of nearly a month must elapse between the "taking" of the correct bud on plants of some sorts and of other varieties. A close observance of the peculiarities of each variety is necessary before any beginner can succeed satisfactorily. As a general rule plants which are grown by the method of what is termed the "large bloom" style show three buds during the season of growth; what is known as the first break, as represented by fig. 10, is formed from the middle of May to the same time in June. Some varieties which show the first bud among the earliest will send forth a second bud during July, but this cannot be considered other than a freak, owing possibly to the early maturation of the first break. In all cases buds formed at this time must be considered useless and should be removed. Taking the plants in a general way, the second, or what is known to growers as the crown bud, which fig. 11 faithfully represents, is formed at the points of the growing shoots in almost the same way as the first break. When this bud shows at the correct time for each variety and is "taken," then, all other things considered, it will develop into a perfect flower. The third break, which is caused by removing the flower bud from the "crown" break and allowing the branches to extend, produces what is known as the terminal bud. It is so named because it is the apex of growth, no other growths starting after the bud is formed. This is the best bud to select for the production of good flowers of some varieties, particularly in the south of England.

As before stated, the time at which the crown bud forms is the all-important point to study. If it forms too early the flowers are coarse in the petals, which much oftener reflex than incurve in the case of incurved varieties. The flowers then are loose and flabby,

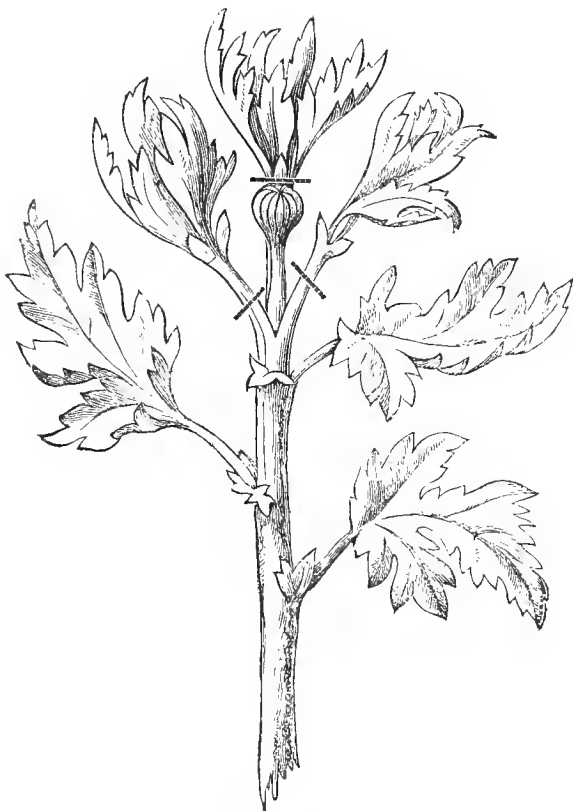


Fig. 11.—Crown Bud.

more like inverted saucers than globe-shaped, which many varieties ought to be. They cover space enough, but are devoid of depth and solidity, the two most essential points in a good flower; and

the dark varieties are not nearly so high-coloured as they ought to be. Let me impress upon beginners, then, the mistake which is often made in taking the buds too early; while disappointment is sure to follow, when quality is considered, if the buds are "taken" at too late a stage, as this results in flowers of a neat character, but much too small for high-class company. Some varieties under this treatment do not exhibit their true character when they are small. The locality in which the grower is placed has to be considered, as there is quite a fortnight, and in some cases a month, difference between the seasons of the buds showing in the south and north of England. Crown buds ought to be "taken" earlier in the northern counties than they can be with safety in the south.

Having given my reasons why the flower buds should not be taken too early nor yet too late, I will now endeavour to make it as clear as I can which is the proper time to select them. The bulk of the Japanese varieties require a longer period to develop from the bud stage to the flower than do the incurved, therefore due thought must be given to this point. For instance, buds "taken" on the 6th of August will not be fully in bloom sooner than some of which buds were selected, say, the 10th of September. Watchfulness and comparison one year with another can only perfect the ambitious cultivator in this point. As a general rule around and south of London crown buds which are set from the 18th of August to the 1st of September are the most likely to produce desirable flowers. Those persons situated farther north will have the buds showing a little later, some perhaps at the same time; while in the extreme north many will not set their buds till quite a month later. There are some varieties—Japanese principally—which require their buds set earlier than the date named.

I append a list of the sorts requiring early bud selection:—

Buds "set" about August 10th.—Boule d'Or, Meg Merrilees, Grandiflora, Golden Dragon.

Buds taken about 1st September.—King of Crimsons, Golden Christine, Pink Christine, Peach Christine, Phidias, Queen of England, Golden Empress, Alfred Salter, Sir Stafford Carey, Empress of India, Hero of Stoke Newington, Princess Teck, Madame C. Audiguier, Thunberg.

Where any particular variety is not named it is intended that the buds of these should be taken during what I propose to call the general time—viz., from the 18th of August to September 1st, and north of London all sorts should be "taken" not later than the time stated if possible. Fig. 11 represents a crown bud just formed. The growth shoots clustering around it should be cut off as denoted by the dotted lines across the shoots, and any other branches forming below those indicated must also be removed when it can be determined that the bud is perfect in form. The

best time for this operation is in the early morning, or in the evening when the dew is upon the plants; the shoots at that time are quite brittle. If the stem is held secure in the left hand, and the young growths which are intended for removal be bent suddenly down one at a time, they snap off. After a little practice this method of taking off superfluous shoots is more expeditious than cutting them off with a knife; but if the operation is effected during the middle of the day, when hot and dry, the shoots are quite tough, and the risk of damaging the flower bud is much increased. When the growths are removed the whole energy of the plant is concentrated in the flower bud. As a safeguard against accident in the manipulation of the buds and shoots some growers retain one shoot at the point for a time, until it is seen that the bud is safely swelling to a good size; but this, I think, is wrong, as the growth is divided between the bud and the shoot retained, and the latter must to some extent rob the flower bud of its due amount of sap, but if care is used to perform the removal of the growths no danger need be apprehended. If a doubt exist in the mind that the bud has received injury from insects or otherwise, a day or two is sufficient to determine this. If so, it is useless to retain such a bud as those, even slightly deformed, cannot develope into perfect blossoms. Retention of a growth shoot near the bud in this case is advisable; by so doing the number of flowers on each plant is not reduced by the loss sustained by the crown bud.

In the south of England, if the summer be exceptionally hot and dry, the buds must not be "taken" quite so early as the times stated, as some are likely to be deformed in consequence of their early development. In such cases it is much better to take out the bud and continue the leading shoot, which in due time will produce another flower bud. Let it be understood it is only in extreme cases of a very hot summer that this slight deviation of bud-selection should be made, and that not amongst growers north of London.

TERMINAL BUD.

A terminal bud is thus named because it is the apex of growth, no other growths starting and growing beyond it like those from crown buds. Terminal buds are the best to depend on for the production of flowers from bush plants and those grown for late use. This bud is not much appreciated by growers of plants for large blooms, because the flowers from buds so formed are much too small except in a few instances. In the north of England terminal buds are formed too late to be of any use for exhibition stands, and for anything else except for late decorative purposes. From few sorts can good flowers be had from these buds

even in the southern counties, and practically none in the north. The only varieties I know that are to be depended upon to produce good blooms from terminals are Emily Dale and Sir Stafford Carey, though Mr. Bunn, Prince Alfred, and Lord Wolseley often develop flowers of very good quality. This occurs when the crown buds form earlier than the dates previously named for these particular sorts. In that case the crown bud is rubbed out and the growths allowed to extend. Flowers from terminal growths are very compact, but lack the size and solidity of those grown from crown buds, and are not formed early enough for the flowers to be developed in time for the shows except in the cases mentioned. Terminal buds form in a general way in the south from the middle to the end of September, and some even as late as the middle of October, but in northern parts they are not formed till the last-named date. The buds are formed in this way: If the cultivator does not wish to allow the plant or plants to bloom from the crown buds, which are sometimes damaged through various causes, the crown bud is cut off, and the growth shoots which start just below that point are allowed to extend. They in time produce terminal buds. The annexed engraving (fig. 12) represents a terminal growth with buds which was taken late in the season, the side buds having grown slightly too long before being disbudded. As shown by dotted lines, all the flower buds except the centre one at the top are intended to be cut off. This should be done at the earliest opportunity when the centre bud can be plainly distinguished from the side ones, which in their early stages cluster close around the centre one, and if the attempt to take them off is made too soon the principal one is sometimes damaged in consequence. A small penknife answers best for the speedy and safe removal of the buds. When the plants are grown for decorative or late-blooming purposes the number of flowers retained on each stem must be ruled by the object the cultivator has in view. It should be borne in mind that the centre bud always develops into the largest flower. Useful flowers for cutting may be had from the side buds when a larger number are required.

DEFORMED BUDS.

Deformed buds in some seasons are very numerous, and growers of Chrysanthemums are often perplexed as to the cause of such growth. These buds swell to a large size, and instead of unfolding their florets in an even manner they split in unequal parts and become forked and irregular in form. Another kind of deformity is perhaps worse than the preceding one. The buds swell to a large and sometimes unusual size. The hopes of the cultivator are raised at the prospect of extra large flowers. As time goes on and the

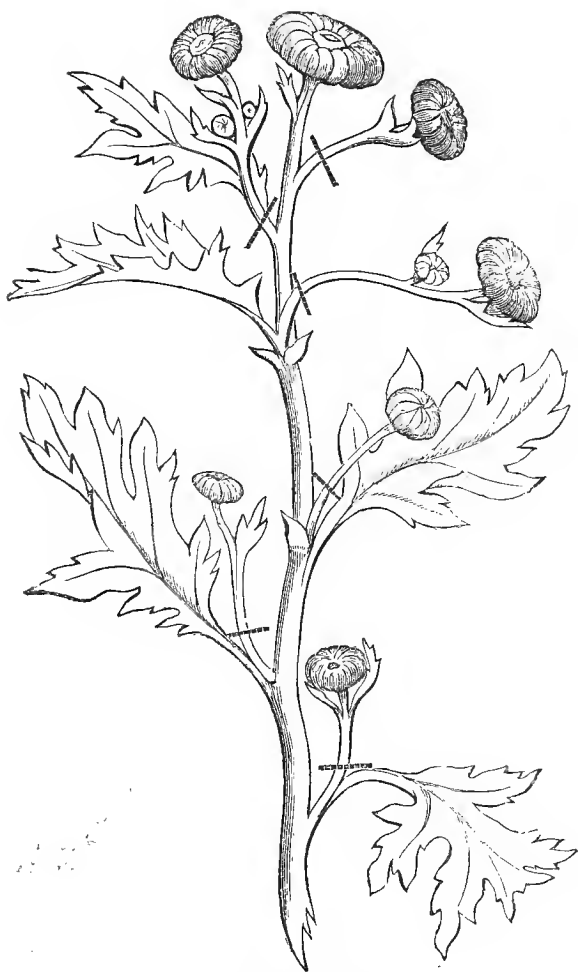


Fig. 12.—Terminal Bud.

florets begin to unfold, it is seen that the flower has a confused centre, or, more properly speaking, it has many centres. The florets, instead of all incurving in a central direction, unfold in different ways. In consequence of such deformity the flower is useless. It is difficult to account for such growth taking place in all cases. No doubt it is caused by a check to growth at some stage in the development of the flower bud. The incurved varieties are more liable to produce such unnatural flowers than the Japanese varieties, and more particularly the Queen family is troublesome in this respect, notably Golden Queen of England. The most frequent cause is the "taking of the buds" at too early a period. Sometimes the flower buds will form quite a month earlier than is required. These, if allowed to remain, will produce blooms of the kind I have described. Again, if the plants have been potted in too light a manner—the soil not pressed sufficiently hard into the pot at the final potting—under these circumstances the necessary hard growth required for the production of perfectly formed flowers is not acquired. The result of such mismanaged operations in potting is abortive blossoms. Flowers of a deformed character are often produced after a very hot and dry summer, consequent upon the plants not at all times receiving the necessary quantity of water at the roots, more particularly after the flower buds are formed. This lack of natural requirements must give a check in some way; therefore I would impress upon all growers never to allow the plants to suffer in this respect. Another reason which causes plants to develop such deformities is when they have been potted in too rich soil and during their growth are fed too highly with strong stimulants, thus causing the growths to be soft, and such growth cannot ripen sufficiently. Some growers think the plants cannot be grown too robustly, but that is a mistake. Strong growth is required, but it must be built up gradually and firmly.

REMOVING SUCKERS.

Suckers or offshoots springing from the base of the plants which are grown for any purpose are produced freely from most varieties, still there are some varieties which are shy in throwing up suckers. In all cases if they were allowed to grow they would rob the plants of some strength which should be utilised in a much better manner until the flowers are being produced; after that period no harm is done by allowing the suckers to extend for the production of cuttings. Until the time stated remove all suckers as they appear above the soil. There is a right and a wrong way of performing this trifling operation. Much harm may be done to the plants by allowing a person to do it carelessly. I once learnt a lesson by allowing the removal of the suckers to be done in the

wrong way. The regular attendant of the plants being very much pressed for time a youth was set to do this ; to facilitate his work he used a long knife and cut the shoots clean out, some of them to a depth of 3 inches under the soil. This, of course, included many roots which grow from the bottom of the suckers, and a considerable check was given to the plants. In careful hands a knife may be used with advantage to cut off the suckers, but the safest manner to remove them is to break them off with the finger and thumb.

ADVANTAGES OF RIPE WOOD.

Many growers of *Chrysanthemums* fail in their desire to produce perfect blooms by not paying sufficient attention to ripening the wood of the plants. Undoubtedly the thorough maturation of the wood has a material effect on the development of the flowers. This is more apparent in the Incurved section than in the Japanese family, as in the former case depth and solidity of blooms are essential points, and they cannot be had from unripe wood, therefore let me impress upon the inexperienced cultivator the importance of this phase of *Chrysanthemum* culture. Ill-ripened branches will produce flowers large enough in diameter, but they lack depth and form. The greatest of all faults is not making the soil firm enough, particularly at the last potting. Under such conditions the roots ramble quickly into the soft soil, and the growths are soft correspondingly and devoid of that hard wood-like character that is so desirable. Using soil of too rich a nature, and the excessive application of stimulants, such as nitrate of soda, induce an undesirable luxuriance of growth. This may be pleasing to those who do not thoroughly understand its nature, but it is, nevertheless, deceptive, for the tissues are not solidified. Overcrowding the plants is another common source of badly ripened wood ; the stems under such conditions grow weakly, and the leaves are imperfect. A free circulation of air amongst the plants, with their full exposure to the sun, all day if possible, contribute powerfully to substantial growth. If the plants are arranged and tied out as shown on page 52, the evil referred to will be averted. By the time the plants are in bloom the wood should cut almost as hard as a piece of Oak, and the colour of the bark should be rich brown in colour, with a rough uneven surface. The leaves of such plants assume toward September a bronzy appearance, though some varieties indicate this character more clearly than others. I repeat, then, that the difference between wood thoroughly ripened and that which is unripe is that blooms from plants (all other things considered) of the former designation are always much deeper in the growth of the florets and firmer in "build," as it is called ; while those from unripe growths are large in diameter

devoid of depth, and contain a number of ill-shapen florets—in some instances without any semblance of incurving in the proper manner. The way to have thoroughly ripened plants is to pot and arrange as has been previously advised. Pay regular attention to their summer treatment of watering and regulating the shoots, and feed them as I will direct in a future issue. There is no such thing as growing the plants very strong and ripening them suddenly, so to speak; the growths must be built up gradually as produced in all their stages from the time the cuttings are taken till the flowers expand.

NORTHERN AND SOUTHERN GROWERS.

It has often been said that gardeners in the southern counties of England cannot grow *Chrysanthemums* so well as those in the north, and misunderstanding has arisen in consequence. Many people aver that the climate is not so favourable in the south as it is in the north, but except in one respect it is a mistake. I will endeavour to point out the advantages and the disadvantages of both districts. Until quite recently *Chrysanthemums* have not been seen in perfection farther north than the neighbourhood of Liverpool. Growers in that district have held their own, and have been regarded as the champions of England. Certainly some of the finest blooms have been shown from gardens in that neighbourhood. The cause of the fame which has been so deservedly earned by Liverpool gardeners must be looked for in another direction—viz., the thorough mastering of all details connected with the growth of the plant. Fifteen years ago *Chrysanthemums* were well grown by Liverpool men, therefore successors to the gardeners of that date have been imbued with an ardent desire to emulate their predecessors and perpetuate the fame of the district. Still, attention has been given to all the requirements of the *Chrysanthemum*. This thorough study of the plant has placed the gardeners of Liverpool in their present position. It has been truly said that nowhere are specimen blooms grown with such a breadth of florets as the incurved blooms from that locality. The advantages they possess over their southern brethren are these—the season not being quite so early as in the south, consequently they are able to secure crown buds at a later period, and this is the only natural advantage they have. Until the last six years it cannot be said that growers around London and farther south stood any chance with the Liverpool men in general competition, but the fine blooms brought to Kingston by Mr. W. Tunnington and the late Mr. F. Faulkner induced London gardeners to emulate their northern brethren, and well have they benefited by the lesson taught them, for southern growers are now able to hold their own in friendly

rivalry with their northern brethren. The disadvantages which southern gardeners labour under is the too early development of the growths in many instances, owing to the hot weather occurring during the months of April and May in some seasons. These premature growths do not produce the desired flower buds at the best time. Many times when the proper buds are retained which produce the largest and best flowers they are too early for the shows, and cannot be retarded so easily in the south as they can in the north ; therefore, much to the disappointment of the cultivator, smaller blooms have to be staged which cannot possess a good chance of competing successfully with the larger ones produced from buds " taken " at a better time.

FEEDING AND TOP-DRESSING.

Feeding and top-dressing are two points in the cultivation of *Chrysanthemums* which are of the utmost importance. The term " feeding " means the application of stimulants at a time when the plants are supposed to have exhausted the greater part of the manurial matter in the soil. When the plants are potted in new soil they grow freely for a time if clear water only is given, and they assume a colour in the leaves natural to the variety ; but after a time if nothing is applied to the roots but clear water the foliage changes to a sickly yellow, and the lower leaves fall. It is just at the time when the roots have taken full possession of the soil that feeding should commence. Many growers advise that stimulants be not applied until the flower buds are formed ; but after having fully considered the matter I think this is a mistake, because in some cases the flower buds do not form till the middle and end of September, and sometimes later than that. From this stage to the time the plants are in bloom is much too short a space to allow them a chance of deriving much benefit from the application of artificial support. The plants ought to be fed long before the time arrives for the buds to form, so as they may be strong at that critical period. If the plants are not sufficiently fed that they may retain their former vigour, how can they be expected to form strong and healthy flower buds ? Weakly plants never produce flower buds of the same quality as stronger plants of the same variety ; and if the buds are not produced in proportion to the necessary qualities of each variety, how can the flowers be properly developed ? When the plants are growing well do not let them deteriorate by lack of attention in this point, but keep them advancing ; allow no check to take place, or a breakdown will assuredly occur when least expected. Feeding should commence as soon as the pots in which the plants are to flower are full of roots—that is to say, as soon as

the roots have pushed through the new soil and are being entwined around the sides of the pot. When in this condition the roots appear to be searching for fresh food, and that is the best description I can give of the time to begin the use of stimulants. The time that the plants were potted, the size of the pots, and the kind of soil used, the manner in which potting was performed, and what varieties are grown, all tend to alter the time when feeding is required. No one can make a mistake by doing as I advise, for he can easily convince himself as to how the rooting process is going on by turning a few of the plants carefully out. The strongest growing varieties always make roots most quickly, and the more delicate growers most slowly; therefore select some of the medium-habited plants and judge from these the manner in which the remainder is progressing.

The best stimulants, and how to apply them, are the next considerations. Local circumstances, in some instances, must be taken into account, as well as the means at the disposal of the cultivator. Various kinds of liquid manures, such as the drainings from the cow houses and stables, are excellent. I prefer the former as being cooler than the latter. Where liquid manure cannot be had from tanks direct from the places named, a very good substitute may be had from a heap of manure by throwing clean water over it, allowing it to soak through the manure, and collect in a pit at the side of the heap. Sheep manure gathered fresh from the fields may be placed in a bag to prevent the manure dissolving and mixing with the water, which renders it too thick. Place the bag in a tank or tub of water, allow it to soak for twelve hours, when the water will be ready for use, and by moving the bag about in the water occasionally a regular supply may be maintained until the qualities of the manure are exhausted. Liquid manure made in the same way from deer droppings or cow manure, all make excellent stimulants for the plants. Soot is almost indispensable to the growth of these plants. Applied in a liquid form it soon produces a change in the colour of the foliage of pale-looking plants. Some place a quantity in a waterpot of water, stirring it to dissolve, then pour it on to the soil in the pots; but this method is wrong, as the sediment remaining on the top of the soil seals at once the passage way for future watering. The correct method of using soot in a liquid form is to place as much as is required into a sack sufficiently close to prevent the soot being washed out, the water soaking through the soot within the bag becomes charged with the manurial properties. Water used in this manner may be given to the plants at every time they require watering, for a week, after which time it is better to withhold soot water for three weeks, then give them another course of soot water. One bushel of soot in a bag will be ample in a tank holding 100 gallons of water along with other manures given at the same time.

It is difficult to define the quantity of manure to use for making liquids, as so much depends upon the requirements of the cultivator. A safer guide is to use the liquid made from animal manures about the colour of brown brandy. Guano finds favour with some growers ; it is easily prepared, and its efficacy is undoubted. A 4-inch potful to thirty-six gallons of water is a safe quantity to use. Nitrate of soda applied at the rate of a half teaspoonful to a 10-inch pot, and watered in, has a remarkably quick effect on the foliage and growth of the plants. No doubt if used once or twice in a season it is beneficial ; but given in excess of the quantity named it would be positively dangerous, tending, as it does, to force the growth too rapidly at the expense of solidity and maturity. Sulphate of ammonia in careful hands is an excellent manure, perhaps unequalled ; but the per-centage of ammonia contained in the different samples varies so much that it is decidedly risky to use it. I have seen plants killed by one or two doses, given of course without judgment as to its safety ; but, as before stated, when applied properly excellent results are obtained. Before using any the cultivator must be positive that his plants are thoroughly well rooted. The pots should be full of roots. The best way to apply it is as follows :—Dissolve one tablespoonful in four gallons of liquid manure and apply it to the plants once a week. The alteration in the colour of the leaves after its application can be quickly discerned if they were pale before. The main veins or arteries quickly assume a deep green, which rapidly spreads all over the leaf ; the colour of the blooms is much improved also. The pinks, lilacs and darker shades are rendered much richer by the use of this manure. Some growers sprinkle the ammonia on the surface of the soil and water it in, but this is dangerous to the surface roots of the plants.

The only matter now remaining is to note the time it should be applied. The time it should commence I pointed out. It is not wise to give the plants the same kind of stimulant continually ; it should be varied, using one sort for, say, a week, then make a change in favour of another. To the strongest growing varieties stimulants should be applied every time they require water, commencing the application in a weak state, increasing the strength gradually until the maximum is reached. Some growers advise that feeding be discontinued as soon as the bloom buds show colour, but in my opinion that is just the stage when assistance is required to develop the blooms. Continue to feed the plants until the blooms are three parts expanded. For the weaker-growing sorts possessing fewer roots than the more robust varieties feeding should continue until the flowers are in the same stage as before named, but the liquid must not be given quite so strong nor so often, occasionally giving clear water only.

Top-dressing means placing on to the surface of the soil something to encourage root action. Various kinds of materials find favour, such as bonemeal, turfy loam which has been previously well soaked in liquid manure, decomposed cow manure, fresh horse droppings, leaf soil, and dissolved bones. Where the soil in which the plants are growing is of a strong retentive nature a covering of half an inch thick of leaf soil and finely crushed bones, two parts of the former to one of the latter, may be used with advantage; but where the soil is inclined to be sandy two parts of turfy loam, with only the fibre retained, and that soaked as advised, to one of bones laid on three-quarters of an inch thick and pressed down firmly is excellent. If there was not sufficient space left at potting time to allow of this quantity being added, build up around the edge of the pot with thin pieces of turf to make space for the application of water after the top-dressing is laid on. This should be done when the roots appear on the surface of the soil after the final potting, which will be some time during August.

TIME FOR HOUSING PLANTS.

Inexperienced growers of *Chrysanthemums* do not understand at what date to house their plants so as to have them in bloom at any given period. Without some knowledge as to the length of time particular varieties require to develop their flowers it is extremely difficult to have the plants in perfection exactly when wanted for exhibiting. This applies both to cut blooms and specimen plants, and is of the utmost importance, as freshness of the flowers goes a long way towards gaining success. Some varieties require a much longer time after they reach a certain stage in the growth of the flower buds to develop than others do from the same point of growth. Practical experience, which means incessant watching to detect the peculiarities of varieties, alone can render a new grower perfect in this detail; but a few hints on this subject will possibly be of advantage to the inexperienced. Circumstances do not sometimes admit of the plants being housed at exactly the time wished. The locality, too, in which the grower is situated has to be considered. If it be a low damp situation a grower should remove his plants inside earlier than another person located on a hill, for the reason that in the low-lying district early frosts are more to be feared than where the position is high, and consequently drier.

Many plants are spoilt annually through being left outside a few days too long. The tender swelling flower buds are easily destroyed by early frosts. When such an accident as this occurs the flowers produced are always crippled and are never perfect. Growers living in a district a considerable length of time know when to expect these early frosts, and it is seldom that any very

great alteration takes place in the time of their arrival ; therefore careful persons are not often caught napping with regard to the proper housing of their plants.

Presuming, then, that a show is to take place from the 10th to the 20th of November, all plants should be housed by the 8th of October, and so on in proportion to the dates fixed. No plants should remain outside without protection a longer period than that named. If they begin to show the colour of the flower by the unfolding of their florets it is useless to allow them to remain longer outside in the hope of retarding them, without means of warding off rains, frosts, and heavy dews, because as the flowers if continually wet quickly damp when placed under cover. Some varieties require moving inside much earlier than the dates named. These I propose to place by themselves, and those which require to remain outside as long as it is considered safe to do so are also named together. Any that are not named require housing at what I will call the general time, say October 1st ; those requiring the longest time to develop their flowers are to be housed first, say about September 16th. Before their removal inside the plants should be examined for mildew, which generally infests the under side of the leaves in autumn, and is more difficult to eradicate than when on the outer surface. The best remedy is to lay the plants on their sides and syringe them as previously directed ; remove all dead leaves also and wash the pots clean, so that no more moisture need be given after housing than is absolutely required in watering. Plants arranged in a clean manner as to leaves and pots have a much better appearance than when put away in a dirty state.

Varieties requiring housing early (September 16th).—Boule d'Or, Meg Merrilees, Mabel Ward, Eve, Duchess of Albany, Grandiflora, Golden Dragon, Sarnia, Cherub.

If a grower fails to get buds at the time he requires of some varieties he then takes the next buds : this makes the late bud slow in developing, and he should house the said plants at the early date to make up for lost time in "taking" the buds.

Varieties requiring a short time to develop :—Beverley, George Rundle, Mrs. Dixon, George Glenny, Mr. Bunn, Prince Alfred, Lord Wolseley, Refulgence, Bouquet Fait, Madame Bertie Rendatler, and Elaine.

ARRANGING THE PLANTS.

The manner in which the plants are arranged when placed inside must depend upon circumstances, such as the means at the command of the cultivator and personal taste. Where practicable an effective manner of grouping them is much the best, in this way considerable pleasure is derived in examining them and comparing varieties. Some growers simply place them on the floor of the house in any

fashion, this is a slovenly manner. No position suits them better than vineries or Peach houses after the fruit has been gathered; the leaves about the time the Chrysanthemums are placed under cover will be falling, thus admitting more light to the plants. A span-roofed greenhouse is a capital place for them, but it is seldom that such a house can be devoted to the purpose. Nowhere are they more effective than in a large conservatory, where Palms are the chief inmates. Some of the tallest plants of Japanese Chrysanthemums standing amongst the green foliage of the Palms are very effective, but where the convenience is limited to Vine and Peach houses the most must be made of the means at command by effectively grouping the plants, arranging the colours according to taste. A long sloping bank arrangement is the best in such a position, both for observation, convenience, and the welfare of the plants. With the object of exhibiting as the chief point to consider it is wise to place the Japanese varieties in a house by themselves, so that more fire heat can be given to them during the time the blooms are developing. The flowers are improved, the colours are brighter, and the florets come out cleaner and more regularly than they do where no fire heat is employed. When all sections are arranged together this additional heat cannot be given without detriment to others which do not require extra heat. In all cases place the plants as near to the glass as possible, so that they may have the full benefit of all available light. The colours of each are by this means brought out more in their true characters than they can be where light is diffused. The flower stems do not either become drawn weakly, as they do when the plants are far from the glass. The strength of the flower stem is a good indication of what is to follow in the shape of large blooms. The plants may be stood quite close together. The leaves of one may touch its neighbour, as seldom it is that space can be given to each plant to stand clear, though it is much more satisfactory where this can be done. When arranged in a solid bank the bottom leaves of the inside plants will quickly turn yellow and fall, but I do not know that so much harm can happen to the plants in consequence, because by the time that takes place the bottom leaves of the plants will have carried out their functions. The back walls of any cool houses which are bare in the winter may be utilised by training some of the tallest plants upon them. Often it is difficult to dispose of the very tall-growing varieties, but in such a manner it is easily done, and the plants always seem to thrive well when so placed.

AUTUMN TREATMENT UNDER GLASS.

Under this head the chief details consist of watering the plants and ventilating in a proper manner. Feeding the plants should continue as previously directed. It is seldom that they will require

water more than once a day, and not always that. The pots being placed closer together air does not pass among them so freely, and the sun does not so readily reach them, therefore the soil does not dry so quickly as when the plants are outside. A dry atmosphere prevents the spread of mildew more than a close damp one. Whatever watering is required should be done in the morning, so that the paths and floors of the house will have time to become dry before night. In damp or foggy weather less air may be admitted, and the hot-water pipes should be warmed during the day, when air can be freely given to prevent the atmosphere becoming stagnant. If mildew shows signs of spreading, dust the parts affected with sulphur at once. When they are housed ventilate abundantly both night and day until the florets are unfolding; then at that stage it is wise to decrease the supply. If any plants are backward in growth so much that they cannot be fully in flower at an appointed time they should be placed in the warmest part of the house, or, what is better, have a house to themselves where special treatment can be given to them as is required. The glass in the roof of the house should be kept as clean as possible that the plants may receive the full benefit of whatever light there is, which is often scarce at this season of the year. By constantly removing the dead leaves from the plants and keeping all sweet and clean the risk of damping among the petals is reduced to a minimum.

"TIMING" THE BLOOMS.

Where it is the intention of a cultivator to exhibit cut blooms of Chrysanthemums, "timing" them is an important matter to study, for without considerable forethought it is next to impossible to achieve the object in view. "Timing" the blooms means having all in perfection at any given date. An experienced exhibitor knows well it is of no use whatever to have some varieties past their best and many others not expanded. What is required is that all varieties, or nearly so, should be in full perfection at the time appointed, so that a good selection can be made, for indeed it is seldom that too many varieties are available. Three weeks previous to the date which they are required great watchfulness is necessary, and very much labour in moving the plants about from place to place to hasten or retard others. This requires doing in a systematic manner, simple as it appears to be, for without care much damage may be done to the tender florets. The best way to carry a tall plant when in bloom is this: One person takes the pot and a second manages the branches and flowers, which are carried in a horizontal manner. The blooms hanging down and being held securely, the gentle swinging does not harm them in the least. It is difficult laying down any guide as to how long each variety

requires to reach a certain stage of development ; but as a rule the large-flowering varieties, such as the Queen family, require from a fortnight to three weeks, according to the size of each flower, to develop thoroughly after they are, say, one-quarter out. Such flowers are very deceptive in appearance. Buds which at opening look thin and promise to be only small flowers often develop into very fine deep blooms—that is, if the buds were set at the proper time ; taking then any of the Queen type in the stage which I have named, if the plants are in an ordinary cool house with a little fire heat occasionally to dry the air they will not require moving ; but if they are more forward, say three parts developed at the same date, such plants must be kept quite cool and be shaded from bright sun, which is best done by hanging newspapers over them during the day. It would not be wise, perhaps, to shade the whole house from the outside, as some varieties will require the full sun's rays to develop them in time. When blooms of any sort are thought to be backward and it is feared they will not be expanded in time, remove the plants at once into a gentle heat where there is not much atmospheric moisture, and give such plants an extra supply or two of sulphate of ammonia : this forces them into bloom quicker than ordinary treatment. It is far better to remove such plants into gentle heat in good time, when it is seen that they cannot be fully out as needed, than to defer their removal till the last few days and then be compelled to place the plants into a strong heat in the vain hope of bringing them out, which is next to impossible ; even if it were the blooms would suffer in colour, particularly the dark varieties. Chrysanthemums being hardy plants, it is more natural for the flowers to expand in a cool place than in a strong heat. Let all beginners bear this in mind, that the colour of each variety, if it is in its proper character, has a much better effect than when they are "washed out," so to speak, by being subjected to undue heat, and that, perhaps, owing to not commencing soon enough to assist development.

As before stated the Japanese varieties, as a rule, take rather longer to unfold their florets than do the Incurved and other sections ; they are also assisted by giving more fire heat, they develop more freely under such conditions. So quaint-looking are they that they seem to require a little aid to unravel their peculiar florets, and this is best done with the aid of enough fire heat to keep the air of the house warm, ventilating night and day.

FLOWERS "DAMPING"—REMEDIES.

One of the greatest evils which a cultivator of Chrysanthemums on the "large bloom" principle has to contend with is the subject of "damping." Many hours' anxious thought would be avoided if

such a defect as the one in question was unknown. Some beginners in the culture of these plants may not know what is meant by "damping." I will explain how it affects the flowers, give my opinion as to its cause, and state the remedy I have found the most effective in checking it. Take, for instance, a large bloom of any of the Queen family which is, say, three parts expanded. The florets appear to be quite solid, and the prospect of a handsome flower quite cheering. All of a sudden, upon a closer examination several brown specks resembling dust in appearance are plainly seen. In a short time—the next day, for instance—it will be found that the dust-looking specks have increased considerably, quite half the florets being attacked in the same manner; and after the lapse of a few days the damping spreads so rapidly that large holes can be seen in them, and if this continues a few days longer the flower is spoilt entirely. This is what is meant by "damping," and those growers who have experienced much of it know well what the consequences are. It attacks the Japanese varieties exactly in the same way. Sometimes it begins upon the very first attempt of the flower to unfold. I have seen buds of Fair Maid of Guernsey which never expanded beyond the first struggling floret or two, but decayed. M. Ardene is a variety very susceptible to this. Damping is more prevalent in wet foggy weather than in a dry frosty air, thus proving that the atmosphere has something to do with its more rapid spread that takes place then than when the air is clear and dry. Where houses are not tightly glazed and rain drips in upon the plants and flowers the evil is most felt; but I have seen very bad attacks of damping take place where water could not possibly touch the flowers, and the air at the same time was kept in a dry state by fire heat.

I will endeavour to explain what in my opinion is the cause. Having closely observed plants which were grown under various conditions, I have come to the conclusion that overfeeding the plants is the principal cause of the trouble. The plants are gorged with artificial stimulants to make them as gross and thick as possible; the roots are crippled with excess of various manures; and though while wood and foliage are being made it is all right, when that growth ceases then a breakdown occurs in the system of the plants, and they fail to produce what is expected of them. I am more convinced of this after having seen collections of plants which were grown for no particular object except for home decoration. Such plants had never received any artificial manures as stimulants, nothing being given to them but weak liquid manure from farm-yard tanks in addition to clear water, and damping there was unknown.

How to stop at once the spread of this pest is perhaps more than I can explain, but I will describe the manner in which I have seen it checked. As soon as it makes its appearance some growers

think it is caused by a lack of ventilation. They at once throw open all the ventilators and doors and cause a thorough draught. My plan has been almost the reverse of this, giving a fair amount of air to the plants, but in such a manner that a direct draught is not caused. We warm the pipes, ventilate freely in the front of the house and a little at the top to let out excessive moisture. It is not the quantity of air, it is the manner in which it is applied that answers best. All drainings from the pots after watering should be dried up as quickly as possible, and everything done to

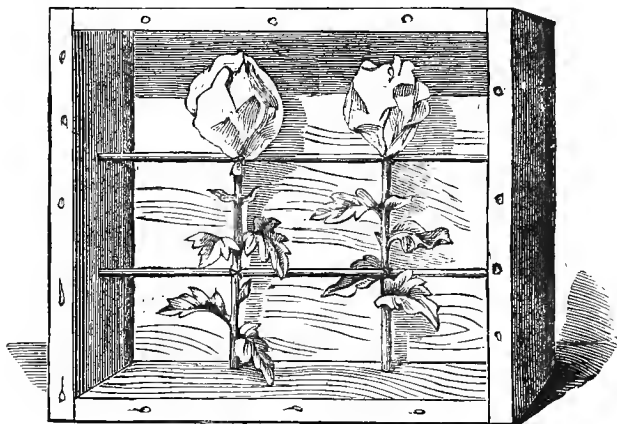


Fig. 13.—Travelling Box.

render the air light and sweet, but overfeeding is probably the direct cause of damping in most cases.

TRAVELLING BOX WITHOUT CUPS.

Persons who have reason to send blooms of *Chrysanthemums* a distance by rail are often puzzled to know how to pack them to preserve them from injury. When packed in the way adopted with other flowers seldom it is that they are presentable for the show table when they reach their journey's end. For the information of those who do not know how to pack these flowers securely without the aid of the cups and tubes which are generally used for exhibition purposes I have had a drawing prepared, showing the best method I have yet seen. Flowers secured in

that way will travel by rail 500 miles without being in the least damaged. It is a capital way to take a few extra blooms when going to a show in case of accident, and when no space in the exhibition box for auxiliary flowers is available. A careful cultivator never goes to compete without one or two extra flowers in case of an accident. The annexed engraving (fig. 13) represents a box packed with two blooms as an illustration how they should be secured. The size of the box must be determined by the number of flowers to be conveyed. If the box is to be sent alone, a stout packing case should be selected, but if it accompanies the exhibitor a box of lighter construction is all that is required. Take, then, an ordinary packing case, lay it on its side, fasten to each end (by means of a nail driven through the end into each) a lath or stick at about equal distance from top to bottom of the box, cut the flowers with a stem of say 1 foot long, and to the cross sticks fasten the stem of the flower securely, first wrapping around the flower a single fold of very thin tissue paper, securing it at the top by a twist in the paper. Should the box by any means get turned upside down no harm can happen to the flowers packed in this manner. If they have to be carried a long distance, tie some wet moss securely around the bottom of the stem. This retains the blooms fresh much longer. Double rows either in height or width can be fastened precisely in the same manner if a greater number is necessary, as the stems need not be cut so long, but when they are less than 6 inches in length the process of cupping the blooms is rendered more difficult, hence my reason for selecting 12 inches of stem to each. The double rails to which the stems are fastened make them much firmer than when one only is used. The flowers may be near enough to touch each other, when no harm will be done. The lid or door should be fastened with four screws, which prevents the jarring caused by nails and is more easily removed at the end of the journey.

APPLIANCES—FORCEPS, AND BRUSH.

Cultivators of *Chrysanthemums* intended for exhibition or even for home decoration ought to provide themselves with appliances, such as forceps or tweezers for the manipulation of the flowers with a view to their improvement, even if they are not intended to be placed upon the exhibition table, as a few minutes' attention given to a flower improves its appearance greatly. Amongst growers there is a variety of opinions as to which is the best kind of forcep to use for dressing the blooms. Fig. 14 represents the best instruments I have yet seen. As each cultivator has his own particular fancy in the selection there is no name by which they are known; those shown in the engraving are made from steel of a

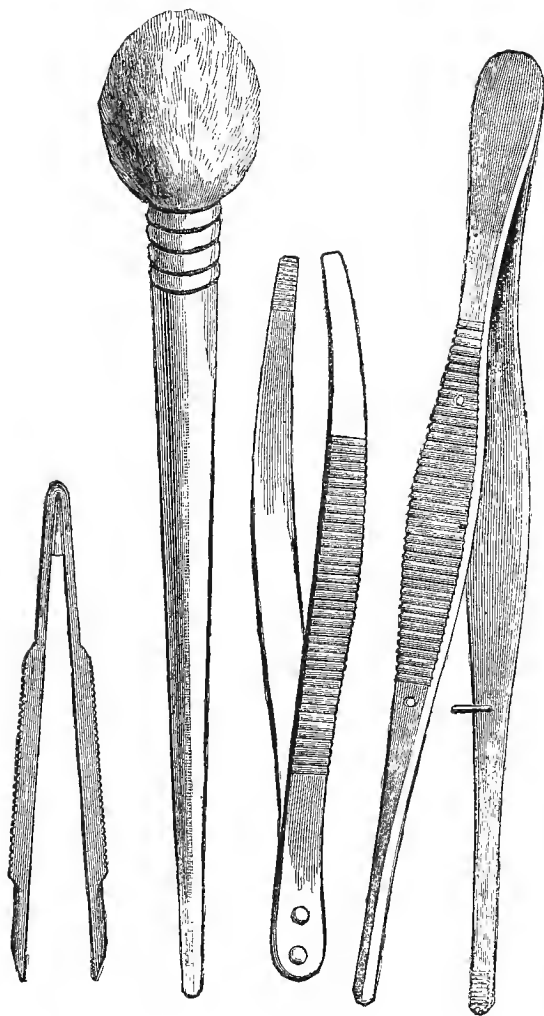


Fig. 14.

special pattern to order. Such instruments vary in price from 3s. 6d. for the smallest size to 7s. 6d. for the largest pair. The brush is made of camel-hair 1 inch long, and the handle measures 6 inches. This is used to free the flowers from dust, which they are almost sure to collect in travelling, and upon the white varieties is a defect, whereas by gently brushing in an upward direction the dust can easily be removed. The smallest size is 3 inches long and one-quarter of an inch wide in the middle. The mouth or points are very narrow, just the extreme point rounded off; these are used for finishing off a bloom for exhibition. The next or middle size are 5 inches long and five-eighths of an inch wide at the rough part, which is made to allow of a firm grip being had of them. The points are square, as can be seen, are rough and one-eighth of an inch wide; these are used for taking out any bad or wrongly placed

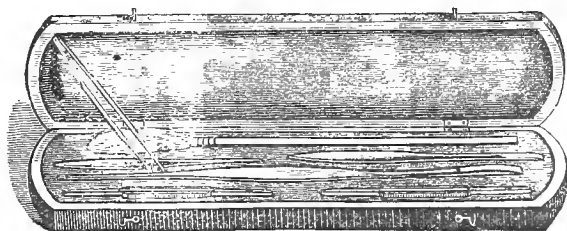


Fig. 15.—Instrument Box.

petals. The largest size measures 8 inches in length, are half an inch wide at the rough or grip part. As will be seen, they are narrow, one-eighth of an inch wide at the points. These also are for removing petals from the centre of a flower of large dimension. They are made with a very easy spring, which facilitates the handling of them considerably. There are various other patterns and sizes, but I consider these a fair sample; any optician or tool-maker can supply them on order. Some growers prefer to use those made of bone and ivory. The objection to them is that they do not grip the florets firmly enough, they are so liable to slip off. Fig. 15 shows the box in which the forceps are kept when not in use. It is not absolutely necessary that such a thing be used, but where much manipulation is required I find it better to have a box for the instruments, as greater care can be taken of them; they are not so likely to be lost or get rusty by laying about. The size of the box is 10 inches long, $2\frac{1}{2}$ inches wide, and $1\frac{1}{4}$ inch deep; spaces are made wherein fits the forceps and the brush also; the box in question is lined with velvet.

CUPS AND TUBES.

Cups and tubes are represented by fig. 16. It is impossible to stage a box of cut blooms without them. There is a great variety to choose from, some being made of wood similar in shape to egg cups. These are objectionable in appearance and do not last as long as those made in the manner I will describe. Those made of

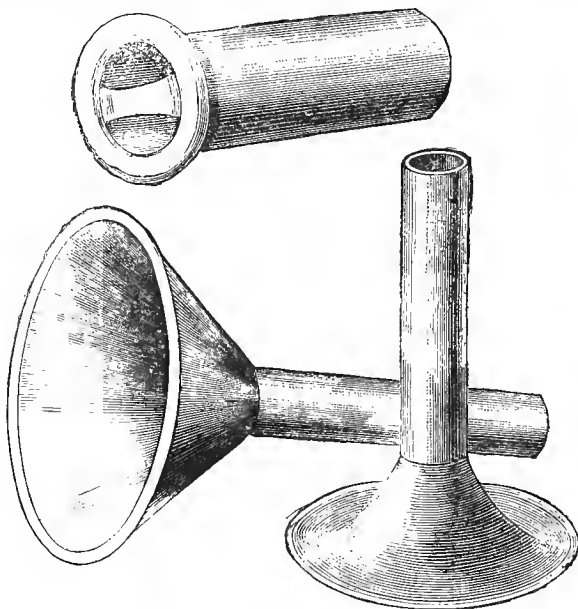


Fig. 16.—Cups for Chrysanthemum Blooms.

wood are not of the right shape in the tube, which is not hollowed out in a slanting direction sufficiently. Some growers use tubes and cups made of tin. These are cheaper than when zinc is used, but as they are liable to rust zinc is far better in the end. The tubes should be made in two sizes as shown in the annexed engraving. The stems of each being the same width, either of them fits into the cup which holds the water. The largest size, as shown in the engraving, is suitable for blooms of the larger varieties

of both Japanese and Incurved flowers, particularly the drooping varieties of the former section, which are much improved in appearance by having the petals supported at a proper height from the board, which, in the case of Meg Merrilies for instance, cannot be done when one sized tube is used for all varieties, and that of the orthodox size, which is 2 inches in diameter and 1 inch deep in the flange ; therefore every grower should provide himself with a few of these larger tubes, which should be $3\frac{1}{4}$ inches in diameter and $1\frac{1}{4}$ inch deep in the flange. The stem should be $2\frac{3}{4}$ inches long, and fit into the cup, as shown, in a telescopic manner.

“ The cup represented is a great improvement upon the older straight plain pattern. As is shown, it is fitted with a piece of brass $1\frac{1}{4}$ inch long and half an inch wide at the bottom, narrowing off a little at the upper end : this being soldered on to the top just below the flange, hanging loose down the cup one on each side quite opposite to each other, forms a tight embrace to the stem of the tube holding the flower. The advantage of these two so-called springs is that the stem of the tube when pushed down can be fixed at whatever height is thought desirable for the flower, be it a large or a small one. This spring does away with the necessity of using any kind of support, as is required for the older-shaped cup, to fix the blooms at a given height from the board. The addition of the spring costs a trifle more than the plain ones, but is well worth it. The cup should be made in exactly the same manner as in the plain system, and should be 3 inches long, three-quarters of an inch in diameter, having a flange at the top one-eighth of an inch broad in a horizontal manner. This prevents the cup swaying to and fro when travelling. Narrow strips of brown paper wrapped around the outside of the stem of the tube which is inserted in the cup prevent the flower dropping lower than is required. Some use indiarubber rings for the same purpose, while other growers place pieces of cork or wood in the cup to raise the flower as required.

NIGHT WORK AND NIGHT ENEMIES.

Growers of Chrysanthemums who are desirous of perfecting superior blooms for exhibition have enemies by night as well as troubles by day to steer clear of. All these evils necessitate constant watchfulness when the flowers are expanding. Earwigs are the greatest pest. It is surprising what amount of depredation is caused on one bloom during a single night by earwigs. Trap them with moss placed inside inverted pots, inverted on a stake amongst the plants, and examined every morning. By this means many may be destroyed ; but the best way to catch them is by going round after dark each night quietly with a light when they are busy feeding on the petals. They must be caught quickly. Nothing

is better for this than a pair of tweezers. The least shake of the plant and they secrete themselves among the petals, and are not at all easy to discover again. Woodlice in some places are troublesome, as they eat the florets from the under side of the flower. The damage is not always seen till the flowers sometimes are spoilt. They are not so numerous when the plants are standing on the concrete floor of the greenhouse as they are in vineries. The mulchings of manure used therein for the Vines is just the place for them to harbour, as it is generally dry on the surface in some parts of the house during the winter. Hand-picking from the flowers is the only remedy, and where they are numerous this must be incessantly carried out. Slugs too often disfigure the flowers by crawling over them, and in some cases they eat them. Where any trace of them is seen during the daytime they are almost sure to revisit the particular spot the next night. In this manner they can be caught after dark. Some bran laid on the top of the pot will act as a bait for them. Cockroaches where numerous are sure to find out the blooms, which are soon spoilt when three or four of these commence to eat them. They are rather difficult to catch when feeding, as the moment the light is turned on them off they go. Where the plants are so situated that they are standing thinly about, a gentle shake dislodges them, when they can be killed on the floor. Cockroaches are most troublesome to plants that are placed in heat to push them along, these pests not generally being found in cool houses, as they are more partial to heat. Green caterpillars are sometimes a source of annoyance : except by chance, the night is the only time to discover their whereabouts.

It will be seen that growers of *Chrysanthemums* have many enemies, all of which must be subdued if perfect blooms are expected. Then there is the ventilation of the house to attend to at night, giving more or reducing it as the weather may suggest, or admitting air in such a manner that rain does not beat on the flowers, which does much damage.

KEEPING THE BLOOMS.

One of the best qualities which *Chrysanthemums* possess is the long time the blooms remain fresh either growing on the plants or in a cut state ; still, much to the disappointment of many growers for exhibition, they often fail to keep long enough. In most seasons a large number of fine blooms are rendered useless through the too early development of some of the varieties for a particular date ; and unfortunately these usually include the finest examples. This is more often the case in the south of England than in the north. The greatest trouble growers situated in the northern counties have to contend against in most seasons is the non-develop-

ment of the flowers in time for the shows. By judicious management blooms can be kept in good condition a considerable time. Those possessing the darkest shades of colour—namely, the chestnuts, bronzes, and the deepest lilacs—retain their freshness the shortest period, while the primrose shades, the whites and the yellows, continue the longest in good condition. Some growers cut the blooms when expanded, and strive to keep them a long time by placing them in dark closets in rooms, but I have found that in no case will they keep sufficiently fresh for exhibition longer than eight days, and this in only a very few instances. Peter the Great is one of the best varieties for keeping. To have blooms in the best possible condition on any given date four days previous is quite soon enough to cut them. If cut earlier the florets lose their necessary solidity, and in consequence are not so large as they otherwise would be: this is particularly noticeable in the Japanese section. When cut the flowers should be perfectly developed just at the time they are quite at their best, and before they lose their freshness. The commencement of decay can best be ascertained by feeling the lower florets, which should be crisp and solid, not soft and flabby. When this occurs the white varieties will soon assume a pink tinge, and in some other varieties a faint brownness in the bottom florets points to waning beauty; therefore when the centre of a flower is fully developed and the lower florets fresh the blooms will be right, and should be cut with a long stem—say 9 or 12 inches, so that a small portion can be cut off every day; place it in a bottle previously filled with water, amongst which a little salt has been mixed—say, three-quarters of a teaspoonful to three half pints of water. It matters not whether the water be hard or soft. Place the blooms in a cool slightly darkened room having a dry atmosphere; this is the manner in which I have found them keep the best in a cut state, but I prefer to allow them to remain on the plants until required, or at least two days before, when they may be cut with safety and treated in the manner above described.

When it is seen that a flower is likely to be too early, growing as it is in the coolest house and protected from sun, the moment it is at its best remove the plant to some cool structure which can be partly darkened, and where air can be admitted freely. A potting shed having a northern aspect, Mushroom house not in use, a large air barn, coach house, in fact any place having the necessary requirements—viz., coolness, dry atmosphere, and partly excluded light, will be suitable. No more water must be given to the roots than is absolutely required to prevent the leaves and flowers flagging. Simply enough to retain freshness suffices, as at this period of the plant's existence the functions are torpid, and the work as regards the development of blooms completed. Sometimes a week and even more will elapse before the plant requires water, particularly if the soil is of a retentive character. The pot when sounded in

the orthodox manner may ring clearly ; still the soil may be moist enough. The best indication of water being required is by examining the leaves, and if they are in the least soft and devoid of freshness then apply clean enough water to soak the soil through, and give no more till the leaves again feel limp. The water which drains from the pot should be at once dried up to prevent damping. Should any signs of this occur at once remove such damaged forets, which only serve to contaminate others near them. Flowers managed in this manner will keep fresh and in good condition for ten or twelve days, sometimes longer.

PREPARING FOR SHOWS.

The old adage of "a good beginning making a good ending" is very applicable to this subject. A systematic method of preparation for a show greatly assists an exhibitor in having all ready by the appointed time to start, particularly if he has a long distance to travel. Some time previous to the date of the show he knows what classes to enter in, and makes his preparations accordingly as to the number of trays and boxes required. The first necessity in arranging the flowers is a light and perfectly clean room. It often happens that the potting shed is the best available place, the benches being the right height, and generally there is plenty of light coming in at the right place—the front windows. This materially assists in arranging the colours harmoniously. Thoroughly sweep the benches, and if at all dusty wash them down ; remove any cobwebs hanging from the ceiling, or anything else which by accident might fall and do damage to any of the blooms that might unfortunately be underneath. A little forethought in this will be an advantage. Next spread out the trays on the tables ; if for twenty-four blooms two trays, each one holding twelve, will be required ; place them ready to receive the flowers allotted to them in their special classes, having small adhesive labels fastened on the front of the tray denoting which class each belongs to—as for example, "24 Incurved, Cup Class," or ditto Japanese, and so on till all the trays are ticketed. Any of the attendants can then see at a glance where to place or take from any individual bloom which it is necessary to remove, without running here and there asking questions and causing confusion at a time when that is least required. To some people all these details may appear trivial, but when something over 100 blooms have to be prepared for one show, and these by a certain time, allowing for a long journey by road and a much longer one by rail, and the time being necessarily cut as short as possible for having them quite fresh, small details must be attended to, method adopted, and forethought exercised, or the work cannot be done satisfactorily. The notices which

were fastened on to each tray are taken off when the stands are staged at the show. When the blooms are all arranged in the stands packing should commence. This is often done in a careless manner, but I would impress upon young beginners the necessity and advantage gained by care in this matter. Never think a few minutes wasted which are spent in properly securing the blooms in safe quarters ; more than once have I seen the first prize lost through carelessness in this one point. It sometimes happens that as the blooms are arranged in their positions for exhibition they are not in the best possible manner for packing. Some of those in the back row are too deep to admit of the next tray passing over when placed in its position in the travelling box ; such flowers then should change places with one in the front row, which are generally lower. This entails more labour when the show is reached in readjustment, but all this extra labour is soon forgotten when the first prize is gained ; and the more times an exhibitor competes the more strongly is it impressed upon his mind that nothing is gained in exhibiting without pains.

The cups containing the blooms should be firmly fixed in the holes in the board to prevent their rocking to and fro. This is best done by wrapping narrow strips of brown paper, say 1 inch wide, around the cup, which is then pulled tightly down into the hole by placing one hand underneath the tray, and with the other hand steady the flower to prevent its being jarred in any way. While this is being done each cup should be examined to see that it contains sufficient water, yet be quite sure they are not too full, or through shaking on the journey the water from one cup will fall upon the flowers underneath. This must be avoided. If travelling boxes are used, like the one figured and described, the blooms will arrive safe at their destination, for little short of a railway accident could displace them.

CHRYSANTHEMUM BOX AND STAND.

The engravings (fig. 17) and specifications will enable exhibitors to provide themselves with the articles represented. The stands for twelve blooms are 2 feet long, 18 inches wide, 6 inches high at the back, and 3 inches in the front. This is mentioned here, as the figures on the stand are somewhat indistinct. It will be seen that there is sufficient height for the blooms when the stands containing them are placed in the box, the space being one-eighth of an inch wider and longer for their reception.

SPECIFICATIONS FOR CHRYSANTHEMUM BOX AND STAND.—
The box to be made in cupboard-form of three-quarter-inch well-seasoned American pine, dove-tailed together at the angles, the sides, top, and bottom to be rebated for the back. Plant a rounded

nosing as shown to the top of the box and a small chamfered plinth round the bottom.

The door to be clamped top and bottom, as shown on sketch, and to be hung to fall in flush with the sides of the box, the door to be hung with one pair of $2\frac{1}{2}$ -inch butt hinges, and to be fitted with a cupboard lock with, say, two keys. Fix a strong chest handle on each side of the box. It will be noticed that when the

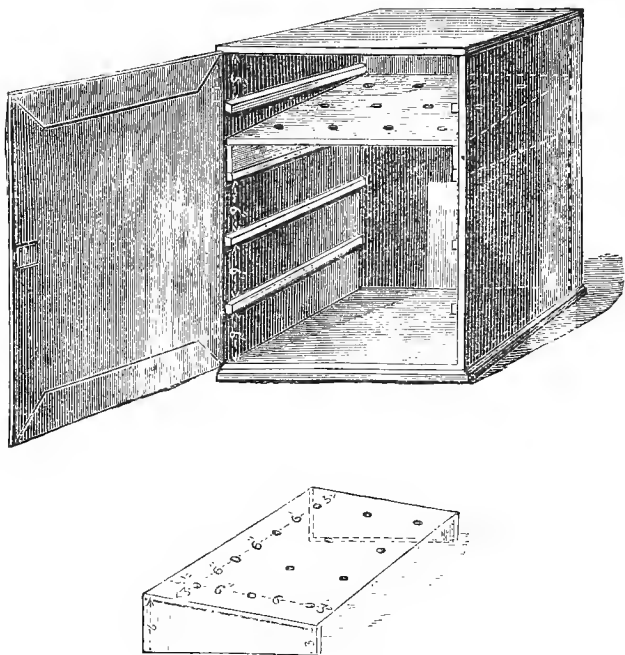


Fig. 17.—Chrysanthemum Box and Stand.

stands are placed in the box the door closes tightly against them, thus preventing any movement during transit.

The clear inside size of the box should be 2 feet $8\frac{1}{2}$ inches high, 2 feet $\frac{1}{8}$ inch wide, and 1 foot $6\frac{1}{8}$ inch deep from back to front. The box is intended to hold four stands, each stand arranged to hold one dozen blooms. The stands are made with tops half an

inch thick, and the two sloping sides three-quarters of an inch thick, the holes to be spaced as shown on sketch. The runners for stands to be seven-eighths of an inch and half an inch, and screwed to the sides of the box as shown. It may be noted that the sizes of the stands as figured on the sketch are the regulation size insisted upon at the principal shows.

I have taken as many as 400 blooms in one season to various shows in boxes of this pattern, and never had even a single petal damaged, much less a whole flower, by transit, and this speaks volumes for the method of packing and the style of the box. When a long distance has to be travelled by road, which in my case has been fourteen miles many times, the roads freely covered with loose stones, the boxes should be securely packed in the conveyance ; each one should wedge its neighbour tightly, and the outer one should be secured by means of blocks of wood such as are used to secure the pots of specimen plants when travelling. The blocks are simply pieces of wood cut in the shape of the letter $\triangleleft$, 4 inches long, 2 inches broad, and 2 inches high at the thick end, which is butted up to the box, and the thin end is fastened to the floor of the cart by a nail driven through. This prevents the boxes shaking against each other. Should the floor of the cart be in any way uneven such hollow places must be filled up with pieces of paper or straw, thus providing a perfectly level foundation for the boxes to stand securely. When the station is reached a careful person will not consign them to the tender charge of railway porters, to be turned on their sides and wheeled and jolted over the stones, but will carefully assist to lift them in and out of the trains, keeping them in an upright position so that the water may not be upset from the cups.

DRESSING THE BLOOMS.

"Dressing" is a term used by growers of *Chrysanthemums* for exhibition ; it means arranging the florets evenly and straight, each one having an inclination towards the centre of the bloom. Occasionally the florets are so close together in places that some will be crossed, others create deformities, commonly known to growers as ribs. Oftentimes some of the florets reflex instead of incurve ; these should be turned back so that they assume their proper character. Some varieties produce "eyes," which means a large patch in the centre of the flower full of seed ; such defects should be filled up when it is possible. Much has been written against this so-called dressing by a certain class of critics, who profess to admire flowers unadorned and presented in a natural manner as growing on the plants. Such critics have possibly not had much close experience with blooms of the incurved section. So long as nothing but legitimate means are employed to improve the appear-

ance of *Chrysanthemums* there is no firm ground for objection to dressing, and opponents of the practice have only to attend a large *Chrysanthemum* show, stand near a box of highly finished blooms, and hear the words of praise applied to them from the *Chrysanthemum*-loving public who know and appreciate good specimens when seen, then change the position and remain for an equal length of time opposite a stand of blooms "staged as grown," and they will soon learn which finds the most favour. Is it not often a case of "sour Grapes" with decriers of dressing? Be this as it may, it is certain that a person wishing to gain success with cut blooms at an exhibition stands but a poor chance of gaining even a third prize if he stages blooms as grown, without any manipulation of the florets. There is no comparison in the appearance of two blooms, one without any dressing and the other with the florets neatly arranged. The globular form so much admired in incurved blooms cannot be had without time being bestowed in removing inequalities. Those plants which receive correct attention during growth produce flowers which require far less dressing than those on plants imperfectly managed. If any dishonest practices are employed, such as inserting portions of other flowers of the same variety, fixing them into position by the aid of gum, then the sooner dressing is extinct the better, but I do not think such means are employed in these days to "improve" the blooms.

When the blooms are about half developed some growers apply supports made from cardboard cut circular in form with a slit half way across to admit of the support passing the stem under the flower. Those supports are intended to preserve the form of the lower petals, and preventing them falling out of place. This method does not find ready acceptance with me, as I think it favours damping by excluding the air; and, moreover, it diminishes the depth of the blooms by preventing the lower florets falling below the guard. A much better method than the preceding one is to hang the blooms downward when they are about half expanded; this is best done by releasing the stems from the stakes, when the weight of the flower will in most instances bring it down to the position required. In the case of large blooms of the Queen type, which might be injured by the stems of other plants while growing together in the group, it is better to remove the former to other structures. If small-span roofed houses are at hand for growing *Primulas* and other greenhouse plants the stage is a capital position to place a few plants of *Chrysanthemums* without much interfering with the regular occupants, first taking out the stakes and tying the stems to the rafters of the roof in such a manner that the flowers will hang down. In such a position the petals develop evenly in their proper places, incurving at the same time in the best possible manner. Blooms treated in this way do not require nearly so much dressing as those do grown under ordinary circumstances. They

can also be retarded better in this way than when growing in a mass, for the reason that the sun does not shine so fully on the centre of the blooms, which in many instances causes them to open quicker and reflex much sooner than when in a downward position. The daily trouble, too, of shading is dispensed with to a great extent, as it is seldom that shade is required when the plants are grown in this manner. Failing the position named, a vinery in which the foliage has fallen from the Vines answers well. Place the plants near the front of the house, tying the stems to the wires, hanging the blooms down in the same manner. All incurved blooms require dressing to a greater or less extent. I have heard people remark that such and such flowers in stands had not been dressed, as they were varieties that did not require any assistance, growing so well in form that nothing could improve them. This is a mistake. No flower which I have at any time staged for competition ever failed to go through the dresser's hands; even those of the Rundle type and Princess of Wales, which develop flowers so evenly in a natural way, require some of their florets arranging before they can be termed perfect examples. When some varieties—the Queen family for instance—are about three parts open, it will be seen that there may be too many florets in the centre to expand fully for want of space; in such cases remove with the medium-sized forceps a few over, say, a space of half an inch in diameter, quite in the centre of the bloom, scraping the base quite clean; this allows the adjoining florets to grow into a much larger size and incurve naturally towards the centre, and thus the bloom assumes the desired form¹.

Blooms which require dressing should be cut with a stem 6 inches longer than the tube in which the flowers are to be placed, the extra length of stem being required for the operator to draw the bloom down into the tube. Select tubes of the size required for each specimen so that the flange is not seen; cut off the leaves from the stem, slip the stem through the tube, bringing the latter close up, but not pressing on the petals at first; then take the flower in the left hand, and with the longest forceps as shown on fig. 14, page 80, take out any florets, one at a time, that are damaged or out of place. It is useless to allow such to remain, or any that are too stiff to incurve. The centre of a bloom will sometimes show a cavity known as an "eye." The common cause of this defect is "taking" the buds at a time not best suited to the variety, generally too late. Such blooms are not easy to dress. The short yellow quill-like florets, commonly known as "seed petals," which form in the centre, must be removed with the medium-sized forceps. The next thing to do is to draw the bloom down in the tube; this reduces in some instances the depth a little; however, this is necessary to gain the globose form so much desired. It is extremely difficult to say how far each bloom requires

to be pulled down to the tube ; the operator must be guided in this by the variety and the solidity of the bloom. The tube should hold the petals in their place, those in the centre incline towards the middle of the bloom, so that no "eye" will be visible. The flower stem is best fixed in the tube by means of small pieces of cork cut wedge-shaped. These are best soaked in water before using, rendering them softer and more easy to push into their

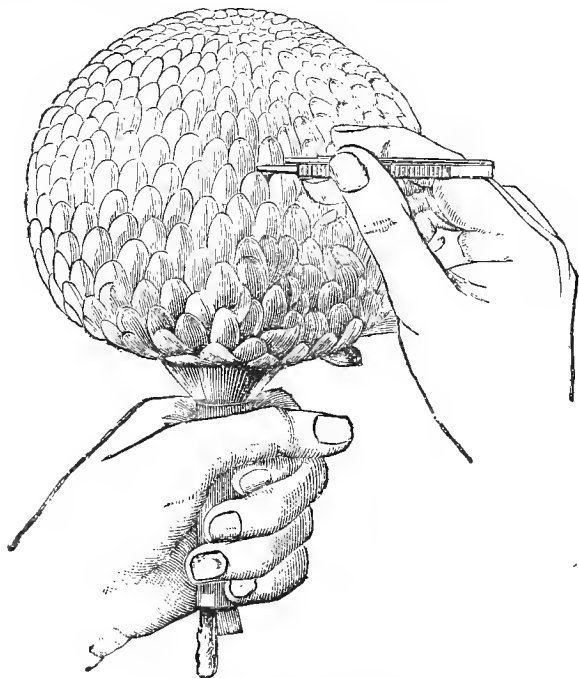


Fig. 13.—Dressing Chrysanthemums.

places with the thumb. As the cork and stem are in the water contained in the cup the cork swells and remains tight in its place, but is easily withdrawn by the forceps should necessity require its being taken out. Some growers use plugs of wood to secure the stems in the tube, but I think they are too hard and likely to cause injury to the stems of some weak-growing varieties, likewise they

cannot be so easily placed in or taken out of the tube ; also that more time is taken up by preparing them than do the cork stops.

When all the details which appertain to dressing the blooms, and which I have endeavoured to explain, are completed, the arrangement of the petals should be the next consideration. The accompanying engraving, fig. 18, shows a bloom of Jeanne d'Arc necessarily reduced, the full size being 5 inches in diameter and $4\frac{1}{2}$ inches deep ; this represents an incurved bloom about two-thirds dressed, the remaining part rough, and is thus sketched as a guide to beginners. The top or centre of the bloom is the correct place to commence dressing. If the florets there show an inclination to reflex, then, holding the flower in the left hand and with the small forceps in the right, very gently draw the jaws up the edges of the florets from the base to the point. If this is done with care and good judgment the centre will be quite filled and the bloom a model of regularity. Great care must be exercised in applying the forceps, or the florets will be bruised. This may not show at once, but the marks may be too visible by-and-by, and spoil the appearance of the flower.

My remarks on dressing have been confined to the incurved family, because well-grown examples of other types—viz., Japanese, Reflexed, and Anemones require no dressing beyond the removal of a badly placed floret, as for instance several flat florets may appear in the disc of an Anemone bloom, or an irregular-shaped ray or guard floret may protrude unduly ; in both instances they must be removed, thus rendering the blooms neat and symmetrical. Some Japanese varieties are rather addicted to showing an "eye ;" such an unsightly object must be removed, first pulling out the "seed petals," then turning the bloom upside down, and by giving it a severe shake the florets next to the centre will generally fall into the place of the abortions previously removed. Well-grown reflexed varieties require no dressing beyond the removal of any long irregular florets that detract from the neat appearance of the blooms.

A GOOD BLOOM.

There is much misunderstanding amongst growers of Chrysanthemums, especially young ones, as to what qualities constitute a good bloom. Having had considerable experience, I will give what, in my opinion, is required in a bloom before it can be called a representative specimen. It is a fault amongst young growers (and some old ones too) to imagine that mere size is the desideratum to aim at. Size I grant is the first object a cultivator has in view, but it must be accompanied by other good points in a Chrysanthemum before it can rank as a first-rate specimen. I will state the several qualities of an incurved bloom as I think they ought to be classed

—namely, size, depth, solidity, breadth of petal, form, finish, freshness, and lastly colour. In some localities, owing to atmospherical conditions, such as dry pure air and strong soil, the colour of the flowers is much deeper and richer than it is in other districts where the light is less intense, as it is in the vicinity of large towns, low damp situations, and light sandy soils. I prefer to measure and compare all blooms when they are dressed and arranged in the stands. Under other conditions, such as when growing on the plants or before being dressed, they are deceptive. All blooms after being dressed are smaller, especially in depth, than before any manipulation of the petals has taken place. They are always reduced somewhat by cupping, notably those that are not solid. The diameter of a dressed representative bloom of the Queen type should not be less than 5 inches nor its depth less than 3 inches; the blooms are often larger, but the size mentioned may be considered to indicate good average specimens. Then take Hero of Stoke Newington as a typical medium-shaped bloom; this should not be less than from 4 to $4\frac{1}{2}$ inches in diameter, and $2\frac{1}{2}$ to $2\frac{3}{4}$ inches deep. This variety produces some of the deepest flowers we have in proportion to the diameter of each. A smaller type is represented by Princess Teck, which possesses much solidity of petal; when in good condition 4 inches in diameter is a good size for this and $2\frac{1}{2}$ deep. Solidity is an essential point of merit. An experienced judge knows at once when he sees flowers which are not solid, as the florets do not lay evenly over each other. Solid blooms should bear squeezing between the finger and thumb without being injured or indented. Blooms of any particular variety which are not very broad in the petals are often more solid than those which have florets of greater breadth, these through their extra size not embedding so closely as do the narrower ones. Breadth of petal, without coarseness, is an acquisition, the breadth being due more to the nature of the soil used in growing the plants, and also to a low and damp atmosphere at the time of expansion, than to skill in culture. Good growers try their utmost to produce blooms with broad florets, but owing perhaps to the absence of the conditions named fail to achieve their object. Form is depth consistent with the diameter in proportion to the sizes named. Finish is the manner in which the flowers are dressed, whether smooth in outline or rough in appearance. Freshness is a point which carries more weight than perhaps almost any other with judges. Blooms devoid of freshness lose points at all times in competition, for adjudicators only have regard to the present condition of the blooms, taking no account of their state a week previously. A want of freshness can be detected at once, showing as it does around the bottom petals by discoloration and softness of the texture. Colour should be good in all cases, particularly the lilacs, pinks, maroons, and bronzes; the yellows should be clear, as for instance orange shades of yellow

are easily seen if they are not up to the standard ; primrose, too, is sometimes pale, being nearer dirty white ; the lilacs show more than any other want of colour, and lose their colour quickly.

ARRANGING IN STANDS.

That there is a right and a wrong method of arranging Chrysanthemum blooms in stands for exhibition is plainly exemplified at almost every show which is held throughout the country. To a beginner this matter may appear to be of little importance, but when he has had experience he will find that a considerable advantage is gained by arranging his blooms in the stands in a manner calculated to show them to the best advantage. An error into which nearly all young exhibitors fall is this, they cut the blooms with much too short a stem, thus fixing them in the tubes so that the blooms rest on the board, which dwarfs them in appearance considerably. The correct method of arranging in the stands is to place the blooms at such a height from the board that the size of each is displayed to the best advantage. The stem should be cut 1 inch longer than the tube ; this allows for elevation, when cups are not used of the pattern as shown by fig. 16. When the blooms are required to be higher than the stem will allow, and cups without springs are used, narrow strips of brown paper wrapped round the stem of the tube will raise the blooms to any required height. If they are placed too high in the stands they look ungainly ; there is a certain point at which they look the best, and this I will endeavour to make as clear as possible. I will take a stand of twelve incurved flowers, giving the names of those varieties which I consider make a representative collection, arranged according to the colours of each so as to harmonise agreeably. This is a point requiring much consideration, as nothing is worse to the eye than two flowers the colours of which kill each other, so to speak, by being staged in the wrong place. I will also give the height at which the back, middle, and front row flowers should be placed from the board measuring from the bottom florets ; the names of the blooms in each row read from left to right as follows—Queen of England, 5 by 3 inches ; Empress of India, 5 by 3 inches ; Alfred Salter, 5 by 3 inches ; Lord Alcester, 5 by 3 inches ; Princess of Wales, 5 by $2\frac{3}{4}$ inches ; John Salter, 5 by $2\frac{3}{4}$ inches ; Jeanne d'Arc, $4\frac{3}{4}$ by $2\frac{1}{2}$ inches ; Prince Alfred, 5 by $2\frac{3}{4}$ inches ; Jardin des Plantes, $4\frac{1}{2}$ by $2\frac{1}{2}$ inches ; Hero of Stoke Newington, $4\frac{1}{2}$ by $2\frac{1}{2}$ inches ; Refulgence, 4 by $2\frac{1}{2}$ inches ; Princess of Teck, $4\frac{1}{2}$ by $2\frac{1}{2}$ inches. The blooms in the back row should be elevated $1\frac{3}{4}$ inch from the stand, those in the middle $1\frac{1}{2}$ inch, and those in the front row fixed $1\frac{1}{4}$ inch above the board or stand. By fixing them at these heights every bloom is shown to the best advantage.

The figures following the blooms denote their sizes, the first one representing the diameter, while the second gives the depth. A selection of varieties could be made to appear much larger on the boards by including such as Golden Empress and Golden Queen of England in the middle row in the place of, say, Princess of Wales and Jeanne d'Arc; the last named would then be brought into the front row in the place of Princess Teck and Jardin des Plantes; but such a stand as that is seldom if ever seen. Therefore I think it far better to enumerate those varieties which are in more general use than to mislead by including the unlikely ones. Reflexed and Anemone flowers should be arranged in the same manner as the incurved.

The varieties of Japanese with long drooping florets require setting up a little higher on the board, just sufficient to allow the points of the florets to stand clear. The cupping of these should be done in a careful and judicious manner. Each variety requires special study, as the forms vary so much in character. Take Boule d'Or or Meg Merrilies for instance, neither of which possessing long drooping florets should be "cupped" in such a manner that the florets are placed in a horizontal position; the tube should be of sufficient diameter to support them in such a way that they retain their drooping character, not quite in such a perpendicular form as when growing on the plant, because in this way much of the size of the bloom is lost by not spreading them out to the best advantage. Place them in the tube then in such a way that the florets droop easily; the relative length of these of each variety must guide the exhibitor in fixing the height from the stand. It would be almost impossible to define accurately the height in inches of each flower. The number of varieties of Japanese so far exceeds the incurved that a "selection" if given would perhaps not be available at a given date. Owing to the interlacing of the florets of some sorts and recurving of others the blooms in this section are not so easily arranged in the tubes as the incurved type. The best way to proceed is the following: Take a bloom of any of the long-petalled varieties, turn it upside down, slip the tube over the stem, place the stem of the flower in the mouth of the operator; this sets both hands at liberty. If the florets are interlaced at the back of the flower, with both hands disentangle them and spread them out evenly, then with one hand hold them in position, and with the other hand slip the tube into its place close under the base of the florets. Tightly hold the stem of the flower and the tube in the hand, turning it into position so that the correct height to fix the tube in position can be ascertained; by slipping up or down at will, the florets can thus be brought into the required form, then with the cork as previously described, make the bloom fast in the tube. The new type Anemone Japanese owing to their long guard florets require treating in the same manner as the others.

Pompon and Anemone Pompons are generally shown in bunches of three flowers, one on each stem, with their foliage. In arranging these in the stands the flower stems for the back row should be cut 7 inches long, for the middle row 5½ inches, and for the front row 4½ inches; the blooms are placed in a triangular position, two at the top and one below, just sufficiently low to allow of the bottom flower being plainly seen without in any way interfering with those above. As the varieties vary in size considerably it is difficult to say how much the front bloom requires to be lower than those above; therefore the size of the blooms must guide the grower in this respect, but 1 inch will allow for the arrangement in most instances. The peduncles of some varieties are so weak that supports are necessary to show the blooms to the best advantage, in fact, all are much improved by fixing them firmly and exactly where wished. Nothing is better for this purpose than galvanised wire, about the thickness of small knitting needles, cut the same length as the flower stem. About 3 inches from the point at the top give the wire an easy bend of say 1 inch from the straight; this gentle curve holds the blooms free from each other. Of course the two longest wires are bent in an opposite direction; then bind fine wire around the stem and the stout wire, and the blooms will be kept in the proper position, and can be set into the cups at will. The front or shorter flower should have a leaning towards the front when staged on the boards. All the leaves being retained on each stem much improves the appearance of this class of Chrysanthemums. Arranged and fixed in the manner described the blooms travel securely any distance. Only the cups containing the water are used in staging these types. Uniformity in the size of the blooms is a point to consider as being necessary to insure success, and an harmonious arrangement of the colours should be adopted. A white and a deep lilac or a purple go well together; never place two pinks or two yellows close together.

Naming should be done with accuracy; misnaming causes much confusion in the season following, if not at the time. An exhibitor not naming his specimens correctly often causes nurserymen much trouble and annoyance. Many people go to shows and see blooms well shown; they take the names and order the varieties, consequently, if wrongly named at the show, when the plants bloom in the following season they are quite different to those expected, because the nurseryman has sent the varieties true to name. Hence there is annoyance to the purchaser as well as to the nurseryman; and it behoves all growers of Chrysanthemums to be particular in naming their specimens. There are various methods of naming the blooms adopted by growers, but the most satisfactory way that I am acquainted with is that adopted by the Kingston Chrysanthemum Society. It is stipulated in its schedules that all names must be written upon labels supplied by it, thus uniformity in the

naming is insured in all classes of cut blooms in the show. Those supplied by this Society are adhesive, about 3 inches long by $1\frac{1}{2}$ inch wide, each label bordered with a narrow blue line. This ornamentation is purely a matter of choice as regards the colour, but the method is good, as when the blooms are arranged in the stands at home the names, plainly written, are fixed on the board in front of them, when if any bloom has to be removed for convenience in packing its proper position is easily found again by the fixed label; hence the advantage of adhesive labels. Some growers have small cards with the names printed upon each; this is an excellent plan to enable the public to ascertain the names, but they are liable to be lost when laid loosely on the stand; also too much time is taken up on the morning of the show in placing them in their relative positions. I prefer the adhesive labels to all other methods of naming.

Attempts have been made by persons desirous of initiating a change of arranging the blooms in stands by staging them in a more natural manner, but the best attempt I have seen has ended in a failure. Such inventors may be pushed to adopt a fresh scheme because they cannot accomplish the dressing of the blooms in a satisfactory manner, therefore I attach little importance to the innovations. Societies have offered prizes for blooms staged without dressing and without tubes, but have always failed in their object—viz., to obtain a representative collection. Many varieties are too weak in the peduncles to admit of their being staged without support, hence the failure. Again, some kinds produce peduncles 9 inches long, and consequently in such instances no foliage can be staged with the blooms, rendering them gaunt-looking objects. I have seen the stands covered with green moss and the front edged with *Isolepis gracilis*, but surely well-grown *Chrysanthemums* do not require any adornment. The old-fashioned plan of placing paper collars under the blooms has become almost obsolete, and a very good thing it is; they never improved their appearance, but rather the reverse.

STAGING AT THE SHOWS.

The same care observed in "preparing for shows" should be followed in staging. Close attention must be given to all small matters. The plans as to how the necessary arrangements shall be carried out, and what part each person who goes to the show shall take in the final arrangements, should be well thought out. The most important point is to arrive in good time, so that no rush or hurrying over what is to be done need take place. When the show is reached unload the boxes from the conveyance as carefully as possible, and stand them under cover where neither the sun nor

rain can harm them, and also be sure they are not placed in the way of any other exhibitor, thereby interfering with his convenience. Let it be borne in mind that all exhibitors have an equal right, or should have, to any privileges for the quick dispatch of minor matters in connection with staging. Be careful to exercise the greatest civility to all your opponents, and do not be above lending a hand to lift a box, or assist in any other reasonable way. These amenities go a long way towards establishing a friendly feeling amongst exhibitors, and thereby making the visit to the exhibitions so pleasant as to create a desire to attend again. Look around for some quiet corner in the building, or a room connected therewith, where visitors cannot trouble you, as criticism of the blooms at that time interrupts far too much the work in hand. Many exhibitors waste much valuable time in walking around examining other people's exhibits and so on. Take one class at a time, re-arrange the flowers according to the colours as previously decided. This is easily done if the labelling of the blooms has been carried out as advised. Each bloom should be examined separately, brushing off any dust which may have accumulated during transit with the brush, using it always in an upward direction in the case of incurved blooms, always finishing off in the centre, which tends to preserve the incurved form. Some florets will be almost sure to be shaken out of place; these must be re-arranged with the forceps, preserving the form previously acquired, and in the case of the Japanese family, if the flowers are at all stale, or even fully developed, the florets will, in some instances, be shaken down, exposing too much of the centre or eye, which must be filled up. This is best done by taking the bloom out of the cup, holding it upside down, and giving it a vigorous shake. Place the blooms at the height previously named; examine all again to see that no mistake has occurred in naming, and especially see that a duplicate bloom has not been accidentally placed in the stand where not required. Spread over the flowers thin sheets of tissue paper, which prevents dust accumulating, and also shades them from the sun, shelters from sharp wind and from the gaze of opponents, who are often anxious to know what they have to contend against in each class, and if they are weak in certain points they can marshal their forces, so to speak, to their advantage; therefore take all available means to keep them in the dark until it is too late for them to make any alterations in their stands. When all the blooms are completed and covered it is time to ascertain the various positions the stands are to occupy, so that when staging them no confusion need take place, as is often the case where the classes are not accurately defined on the tables. All good secretaries make this an essential point of observance. Some exhibitors are very fond of exposing their exhibits as soon as they reach the show, staging them at once, thereby exposing themselves too much to the

chances of defeat. Many exhibitors attempt to fill too many classes; it is far better to make fewer very strong. Always pay especial attention to the leading classes, making them as strong as possible, even if it can be seen that you are almost sure to win by points; but remember that there is safety in numbers. When the time arrives for staging commence with the small classes first, and always be punctual, remembering that if exhibitors are not ready at the time, the judges are not allowed sufficient time to make their awards as carefully as they would wish in some cases, as the public object to be kept waiting longer than the stated time for opening the show. When staging the blooms be sure that the card denoting the number for each exhibit is in its proper place; when this is ignored confusion often occurs, which might be avoided by using a little forethought.

JUDGING CHRYSANTHEMUMS.

I have much pleasure in incorporating in my series of chapters on the Chrysanthemum the following notes on judging, with which I have been favoured by Mr. J. WRIGHT, of the *Journal of Horticulture*, who has had great experience in the work, and shared in awarding the twenty-five-guinea cups that I have had the fortune to win in excellent competition; and it is gratifying to feel that my able opponents have borne willing testimony to the justice of the awards on the several occasions.

NOTES ON JUDGING.—Chrysanthemum shows may be said to form a brilliant close to the floral year. They are the last and brightest of exhibitions, and appear to be constantly increasing in number, extent, quality, and popularity. At no other shows are visitors more numerous, and especially more critical, and for no cut flowers are there so many substantial prizes offered as for the great November favourite. For these reasons the question of judging is of paramount importance. The blooms are grown to be judged, and cultivators strive to produce them in the best possible condition, whether they are placed in public competition or arranged to form home exhibitions. Many of these are highly meritorious, and the public are thoughtfully invited to share in the enjoyment of the owners of the collections. These are "judged" unofficially, but judged nevertheless, and it is a consciousness of this fact that stimulates growers to excel in the culture of the plants and blooms. The root and mainspring of this commendable spirit of emulation is traceable to the public displays where man competes with man in friendly rivalry for the coveted prizes.

It is obviously a matter of vital moment that these prizes be rightly awarded, both as an act of justice to individuals and as indicating a standard of excellence for the guidance of those cultivators who have still "something to learn," and these, it may be confidently stated, are in a considerable majority. A prize, then, wrongly adjudged is something more than an act of injustice to an individual, for it amounts to setting

up a wrong standard of value, which is a public misfortune. An example will render the matter clearer. Several stands of incurved flowers are placed in competition for a silver cup. Those in one stand range from 5 to 6 or more inches in diameter, and 2 or 2½ inches deep; the florets are broad, though some of them are not particularly fresh, but the blooms almost cover the board. Those in the competing stand range from 4 to 5 inches in diameter, but are 3 inches or more deep; the florets may not be quite so broad as the others, but are faultlessly disposed, and the blooms fresh and firm. Yet the prize is given to the former because of their size and "weight;" but the latter term is a misnomer, for if the whole were weighed the so-called small and "light" blooms would be the heavier because of their solidity. By such an award hollowness and roughness, which are really defects, are recognised as virtues, and cultivators are invited to perpetuate those defects if they hope to win a silver cup. Such a mistake as the one cited, therefore, means much more than the loss of a cup to an individual, for it represents the seal of authority stamped not on a true but a false standard of excellence, and the inexperienced are thereby guided along the wrong path.

A perfect Chrysanthemum bloom must embody several qualities—namely, size, depth, solidity, breadth of petal, finish, freshness, colour. That is the order in which they are placed by Mr. Molyneux. In practice the qualities are grouped somewhat in this way: the judges take into account size, with symmetry, solidity, and freshness; breadth, substance, smoothness, and colour of florets, with the general finish of the blooms. The question of size is not determined by the circumference alone, for depth is never overlooked, or ought not to be, and the nearer the depth approaches the diameter of a bloom the more meritorious it is in point of "build." The presence or the absence of those qualities are perceived at a glance by the trained eyes of experienced adjudicators, and the value of each bloom can be determined in a moment and expressed in "points." Judges must, furthermore, be acquainted with the character of each variety and its capacity, so to speak. It is not possible, for instance, for a "little Cherub" to occupy as much space as a "big Empress," but that is not a sufficient reason that the latter should always receive a greater number of points than the former. The exact reverse would occur if the small variety were better of its kind than the large one. That is the real question to determine, and to enable the actual merits of the blooms to be appraised the judge must have an ideal bloom or perfect example of every variety that may be under examination in their "mind's eye" when engaged in their work. When all other qualities are apparent size carries the day, but if accompanied with roughness, hollowness, or dinginess, mere bulk fails to secure for the bloom a high position, and a full, fresh, solid, bright, and well-finished medium-sized bloom often wins five points when a considerably larger example, but otherwise defective, only scores three or four. When a prize is offered for the "champion bloom" in a show, it is very seldom indeed that the largest example is selected. The honour usually falls to one approaching it in size, but possessing other qualities that the bigger one lacks. The points to aim at, then, in producing a perfect bloom are the greatest size combined with the highest quality attainable, so that the bloom when staged is in the most "perfect phase of its possible beauty." If an incurved Chrysanthemum

bloom in the acme of its freshness is anything over 5 inches in diameter and $4\frac{1}{2}$ inches deep can be thrown across a room and caught like a cricket ball, yet still retain its contour, it is not far from being perfect. Blooms are not, of course, judged in that way, but the simile is introduced to impress on cultivators the importance of solidity.

Mr. Newton, of the Inner Temple Gardens, London, has defined a good bloom as follows:—"It must possess symmetry—that is, excellence of form, all the parts of the flower being duly balanced; it must possess firmness—that is, density of petals, each possessing sufficient substance to retain it in the desired position; it must possess colour and freshness—that is, the bright colours should be as bright as possible, and the light flowers clear and pure. Now we come to size. On this point I would say the larger the bloom is, provided it possesses all the above properties, the better. Of course, I mean size of bloom in relation to quality. For instance, a very large and loose bloom, with its consequent roughness, I should not deem equal to a bloom somewhat smaller, yet solid, bright, and smooth." This is in complete accord with the above description of a superior bloom, and in no practical sense differs from the enumeration of "qualities" by Mr. Molyneux.

As to the method of judging, this in close competition must be by points. There is no other way in which justice can be done except by lucky guessing, nor the decisions, if questioned, defended. When 25-guinea cups are at stake there must be no guessing in the matter, but absolute certainty of the accuracy of the awards must be arrived at in a systematic manner, founded on the critical examination of every bloom, and registering its merits; and if that is requisite in the case of valuable challenge cups it must of necessity be equally so when smaller prizes are at stake. Justice is not to be measured by money. It is as dear to the poor man as the rich, to the winner of a 5s. prize as to one of five times £5 in value, and the same method should be adopted, and the same care exercised, no matter what the value of the prizes may be. And, as a matter of fact, more time is often spent in awarding the prizes in a minor class than in one for which all the floral world is "waiting for the verdict." It is equally true also that judges are often much longer in deciding on the second and third prizes in a "big cup" class than in awarding the premier prize. This is not mentioned in the sense of praising men who want no praise, but to let second and third prizewinners and exhibitors in small or "local" classes know that the mere "value" of the prizes is never thought about by adjudicators of standing who officiate at the leading shows, and they would not be worthy of the trust reposed in them if it were.

In the rules formulated by the National Rose Society for the guidance of judges we find the following—"Judging shall be by points. Three points shall be given for the best blooms, two for mediums, one for those not so good, but not bad enough to cut out, and an extra point for a very superior bloom." And again, "When stands are equal in respect of blooms judges shall proceed to consider the general evenness, variety, arrangement, and setting up, the boxes being placed side by side and in the same light for that purpose." Those "instructions" are applicable to judging Chrysanthemums, subject to one very important alteration. "Three points," with an occasional "extra" thrown in, are quite in-

adequate as a maximum number for a perfect Chrysanthemum bloom, for the simple reason that it is not possible to group the blooms into three defined orders of merit. Not less than six points should be allowed for perfect blooms, as then the slightly differing gradations in merit of the others can be much better expressed than when three points only are allowed as a maximum. Even when the larger numbers are taken as a basis two stands of blooms occasionally "point up" equal, then an extra point is sought for in evenness, colour, or arrangement. And, further, judges are often in doubt as to whether a bloom should have, say, three or four points—that is, they feel that three scarcely does it justice, while it is hardly worth four. What then? They usually "strain a point," and enter four, bearing the entry in mind, and doing the same in a case of doubt in respect to a bloom in the competing stand. That is judging by compromise, and not on a fixed scientific principle. To arrive at a true estimate of merit there should be two denominators—points and marks, twelve marks making one point, just as twelve pence make one shilling, which is easy enough to remember, and clear and simple enough in reckoning. If a bloom is not worth six points, yet five scarcely does it justice, why not enter it at 5·6, the six representing marks or half a point? similarly we may find the true value of the next 5·9, its neighbour 5·3, and another in the row 5·6. Suppose these represent the back row in a stand of twelve blooms, we have a total of 22 points, the 24 marks making 2 points. If points alone were relied on the first bloom would probably be awarded 6, the second 6, the third 5, and the fourth 6, or a total of 23 points, one point being gained not by the merits of the blooms, but the fault of the system. If one point can be gained in four blooms six can obviously be gained (or lost) in a stand of twenty-four, which is certainly not a pleasant contingency; and it is suggested that in all cases in which the relative merits of the competing stands are not clearly shown by one denominator that two should be employed, and the chances of a mistake occurring would then be reduced to a minimum.

It does not follow that "point" judging should be adopted throughout a show. Common sense must be exercised in this matter. In many classes the distinctions between the competing stands are manifest at a glance, and it would be a waste of time to examine the blooms individually; but where the competition is at all close the value of each bloom should be noted down and the added numbers will be the verdict. Nor is the process a slow one. Judges often spend twice the time in marching backwards and forwards, balancing the blooms in the different stands (and not infrequently getting confused in the work) that would be necessary for "pointing" them systematically. Good judges will determine the value of the blooms almost as quickly as the figures can be put down, and a stand of 24 is often completed in three minutes. When this method is resorted to the blooms should be "taken" from left to right in each row, first completing the back row, then coming back to the second and front lines respectively. These should be done in all the competing stands in which "pointing" is necessary before any of the rows of figures are added up. The totals are found in a few moments, and the work is done. If the press reporters, as most of them do, take down the names of the varieties in the same order in which the blooms are judged, the value of every one can be seen on comparing them with the judges' figures,

and thus these officials are fortified in case their decisions should be questioned ; and it may safely be said that in the event of revision the original verdict of experienced adjudicators stands in ninety cases out of a hundred. It is not assumed that the best of judges are immaculate, but it is a fact that if an error occurs it can usually be traced to hurried action through delay in staging, leaving not much more than half the allotted time for determining the awards. In that event the judges must either "rush through" the collections too quickly, or be hemmed in by a crowd of visitors. In either case it would be little short of a miracle if every award were absolutely correct, as it should be ; and if a mistake occurs under those circumstances the responsibility cannot wholly rest with the judges, but at least a large share must be borne by the officials of the show in failing to carry out the conditions of the schedule. In this respect a well-merited word of recognition must be accorded the directorate of the Kingston Show where everything is invariably in readiness at the appointed time, and the proceedings are conducted like clockwork.

It is very important that exhibitors exercise great care in naming their blooms, or duplicates may be accidentally inserted. In that case the stands will almost certainly be disqualified, for careful adjudicators are in the habit of satisfying themselves that they are acting in accordance with the schedule. That is their plain duty, and they will do it however painful it may be to them to rule splendid stands "out of competition." One mistake is quite sufficient in a class, and no judges can be expected to knowingly make another, as they must do if they ignore the conditions that are published for the guidance of all.

In view of the practice of offering prizes for twelve blooms in eight varieties, twenty-four blooms in eighteen varieties, or forty-eight blooms in thirty-six varieties, awards have occasionally been made in favour of exhibitors staging the greatest number of varieties, while the blooms in the competing stands, in which there were necessarily duplicates, were, on that account, much superior. Such verdicts are not sound. The prizes are given, or ought to be, for the best blooms, and if in a class described as "twenty-four blooms in eighteen varieties" an exhibitor stages the stipulated number of varieties (eighteen), and his twenty-four blooms are better than his opponent's in twenty-four varieties, the latter cannot be justly adjudged the prize, simply because he has exceeded the limitation. So long as an exhibitor meets all the stipulated conditions he does all that is required, and the merits of the blooms, not the number beyond the limit, should be considered by the judges ; indeed, in a class worded exactly as quoted, stands that exceed either the number of blooms or of varieties should be disqualified, just as collections of fruit or vegetables are disqualified that contain a greater number of dishes or varieties than are named in the schedule, for if it is right to disqualify in one case it seems difficult to understand how it can be wrong in the other. If the stipulation were for "twenty-four blooms in not less than eighteen varieties" the judges could not disqualify if there were more than the minimum number, as it is implied that more may be staged, but the merits of the blooms alone should determine the awards. The framers of schedules cannot be too precise in the wording of the classes, for when a sentence is capable of more than one interpretation neither exhibitors nor judges know exactly what to do to be right. They have no difficulty

when the conditions are clearly stated, as in the Liverpool schedule—namely, “Twenty-four Incurved and twenty-four Japanese blooms; not less than thirty-six varieties, and not more than two blooms of one variety.”—J. W.

My experience of judging, which is not slight, and according to numerous invitations may increase considerably, enables me to appreciate the soundness of the above remarks in every particular. As an exhibitor I have been accustomed to examine carefully the relative merits of competing stands, and am convinced that in close competition the only way in which justice can be insured is by “pointing” the blooms; and I am further convinced that occasions arise when one denominator is not sufficient for gauging with exactitude the merits of some of the examples, therefore I am strongly of opinion when stands “point up” nearly equal in the ordinary way that they should be examined again, and their merits recorded in the manner suggested. As in the balancing of accounts pence must be included as well as shillings, so in ascertaining the exact value of stands of Chrysanthemum blooms that approach each other in merit, the “marks,” that bear the same proportion to points that pence do to shillings ought not to be ignored. We occasionally find that judges, when in a difficulty in respect to two collections, find relief in awarding equal prizes; but this cannot be done when a cup or other article of value has to be adjudicated, and I suspect that it is no more likely for two stands of blooms to be staged absolutely equal in merit, or with not a mark of difference, than that two exhibitors shall appear without any dissimilarity between them. There is a difference in the blooms, and that difference should be found and expressed. This can be done in the manner suggested, and I cannot imagine it can be accomplished so well in any other way. Nothing is more easy than judging some classes: it is close competition that tests the capacity of experts, and as it is impossible to foretell how severe the contest may be, skilled and independent adjudicators who have reputations to maintain should be provided to officiate at shows, and their names published in the schedules, good judging being not less important than liberal prizes in establishing public confidence in Chrysanthemum societies.

WAITING FOR THE VERDICT.

Probably the most anxious time an exhibitor of Chrysanthemums has during the whole year is the short period in which he is “waiting for the verdict;” this is rendered more so if he is in doubt as to how the judges will decide. Some growers possessing much experience can form a pretty correct opinion at the time of staging, except where the quality of the opposing collections are

pretty even with their own ; in such cases it is only by examining every bloom on its merits that a satisfactory conclusion can be arrived at. This can be much best done by judges who do not know the collections, nor have any partiality. The grower is at times likely to regard his own geese as swans.

The best way an exhibitor can employ his time during these anxious moments is to busy himself with the packing up of his tools, bottles, boxes, and spare blooms, stowing all away snugly, so that they do not interfere with anyone ; also sweeping up the room, leaving all neat, so that no difficulty will be placed in the way should circumstances require the same favour to be granted on another occasion. Many times have I seen exhibitors much too careless in this matter, leaving their boxes and rubbish, such as decayed florets, bits of wood, and so on all over the place ; this is not as it should be. Sometimes exhibitors hang about the doors of the building, anxious, no doubt, to pick up a word or two from officials passing to and fro. I have known false reports circulated, which caused an exhibitor to despatch telegrams notifying his success, but when the result was officially announced, instead of his being at the top he was at the bottom of the list. No doubt this anxious feeling is not easily overcome by "young beginners" in exhibiting ; even older men cannot always suppress their feelings at such critical times.

The best advice I can give to young exhibitors is this : As soon as the duties of staging and tidying up are complete, let them leave the exhibition building entirely and find a hairdresser. An acquaintance with soap and water will do much toward refreshing the outer man, whose appearance may not be too bright after a long railway journey and loss of sleep. Some dinner will improve the inner man, and then the anxious exhibitor ought to be in a good frame of mind for receiving the verdict. If he should be the lucky winner and the stake at issue an important one, rest assured he will receive congratulations abundantly, and feel the truth of the old adage that "there is nothing succeeds like success." Accept the greetings unostentatiously, and do not speak lightly of your opponent or his blooms, but remember that although you are at the top of the tree to-day another year you may exchange places. In many cases it is only a turn of Fortune's wheel in your favour. If you happen to be placed second, do not seek to cavil with your more lucky opponent over some of his blooms, even if weak points can be found in his stand, as, depend upon it, more can be found in your own. Accept the verdict of the judges with a good grace, for in nineteen cases out of twenty it is right, and return home a wiser if a sadder man, but with the spirit of emulation stronger within you. Much information can be gained from defeat, and if turned to account it may enable you to outdistance your rival on the next occasion.

TAKING NOTES.

Growers of Chrysanthemums, and more particularly those who exhibit them, should always take notes of any new or uncommon varieties which they do not possess, but see staged at the shows, as new varieties possessing merit are sure to find their way there. This plan is preferable to purchasing supposed new kinds early in the season, growing them, and eventually finding them worse than some already in their possession. This applies to the Japanese varieties mainly, as they are sent out each in far larger numbers than any others. In the afternoon of the day, then, on which the show is held make a practice of thoroughly examining all the stands to see if any new varieties are staged; even if they are not presented in good form an idea can be formed as to their ultimate qualities when grown under favourable conditions. I note carefully down the name, what section they belong to, the colour, form and size of each, and who they are exhibited by: this is all useful matter for future reference. Some growers do not do this, but depend upon the opinions of others, but I can assure all young beginners that it is time well spent.

Note-taking at home is also of much value. Young growers especially should note in separate columns the names of varieties, the date when propagated, when crown and terminal buds were taken, and how the blooms developed from each; at what time, and how the plants were fed with stimulants; when they were housed; what size the buds of certain kinds were at that period; the time from the date of housing each variety required to develop, and how long the blooms remained fresh after expansion, also the size of each. All these items are most useful. I do not think that any grower can become proficient in the culture of the Chrysanthemum without taking copious notes, and referring to them very often during the following season. By such observance the peculiarities of varieties are ascertained, a repetition of former mistakes avoided, and the end in view more easily attained. My practice of registering observations is the following:—

Name.	Propagated.	Crown Bud.	Remarks.
Queen of England....	December 8th	September 1st	Right date.
Peter the Great.....	" 7th	August 9th	Too early.
" "	" 26th	" 25th	Right.
" "	" 26th	September 8th	Too late.

I strongly urge on all who are striving for superiority in Chrysanthemum culture to adopt some such system, and they will be certain to find their notes of great service in the work in hand.

THE LEAVES OF CHRYSANTHEMUMS.

The leaves of the plants can be studied with advantage. Suppose a grower of Chrysanthemums has varieties sent to him that he is wishful to procure, and they are not sent true to name ; he ought to be able to detect the mistake by the leaves in time for the error to be rectified, instead of losing a season in finding it out. Or, if by chance labels get removed and misplaced, as they often do in potting, the mistake can be detected and corrected at once, as an observant cultivator knows all his varieties by their foliage as well as by their blooms. A few examples of leaf and growth peculiarities may be adduced.

Refulgence has dense green, deeply cut foliage with green stems, which assume with age a purple green. Soleil Levant is easily known by its leaves, which have very long stalks and droop much, giving it the appearance of suffering by want of water ; the stems are quite dark in colour. Venus, both the pink and white varieties, are known by their short leaf stems, and the leaves overlapping closely, giving the plants a dense appearance. Thunberg has stems the darkest in colour of any variety ; the leaves are long and droop much, which gives it the appearance of being unhealthy. Peter the Great has green stems, large broad leaves with short stalks, and the leaves are cut but little compared to some varieties. Cherub is easily known by its light green wood ; the leaves grow in an upward direction, the veins of which are plainly seen, as they are generally much lighter in colour ; this variety is quite distinct from all others. Grandiflora has leaves very thick and heavy in substance with a drooping character, and assume bronzy shades of colour early. Meg Merrilies, Golden Dragon, and Boule d'Or are distinct from others, by reason of their leaves being, as a rule, of a pale colour during the growing season ; this is more noticeable in some localities than in others, owing possibly to the soil. These few varieties and their peculiarities will suffice to show what is meant by a study of the leaves.

HINTS TO SOCIETIES ON OFFERING PRIZES.

Chrysanthemum shows are increasing yearly, and are being established in nearly all populous towns and cities. In and about London, where there are so many exhibitions, the dates must, in a few instances, clash with each other. This necessitates a liberal schedule of prizes to tempt exhibitors to compete. The first consideration of every society ought to be the exhibitors, because without these there can obviously be no show. There is, in my opinion, no prize which incite so much competition and bring so many good speci-

mens as challenge vases. These create a stimulus both to exhibitors and visitors, and the annual floral tournaments are looked forward to with great interest, and not without anxiety, as those exhibitors know who have had the custody of a costly trophy for a year, and other able men striving to relieve him of the responsibility. A good prize in money with the challenge vase is calculated to encourage the best growers to enter the lists and thus make a good show.

Some societies offer prizes for forty-eight blooms, composed of twenty-four incurved and the remainder Japanese varieties, all to be distinct. This number prohibits many persons from competing. It is most difficult for even the largest growers to stage forty-eight distinct varieties in the best condition. What is better and calculated to make a better show is a class for forty-eight blooms, twenty-four to be incurved, in not less than eighteen varieties, and not more than two of one sort; the Japanese to consist of the same number and under similar conditions. There is no comparison in the ease with which this class can be filled to the other class, where all are to be distinct. More uniform stands can also be obtained by duplicating some of the blooms, and the general public are better satisfied—a matter which societies cannot entirely overlook. Unfavourable comparison is often made between stands, one containing all the flowers distinct, and the other thirty-six varieties only. It is not possible to compare them, as the addition of twelve duplicate blooms in the place of twelve weak ones makes a marked difference in the appearance of the stand. Another class requiring attention is that for Anemone flowers. Since the advent of the new type (Anemone Japanese) the older varieties, of which Gluck is a fair representation, are fast being elbowed out of the shows by their more attractive rivals, simply because these are more appreciated. The remedy, to retain both sections, is to offer prizes in separate classes, whereby both are encouraged without detriment to either.

It is most important that the classes in schedules be so worded that only one meaning can be attached to them. It is not possible to be too careful in this respect, as indefinitely expressed stipulations lead to confusion and mistakes, as well as discourage entries, for many exhibitors would rather keep their blooms at home than incur the risk of their being disqualified at a show, and of these I am one.

SUMMARY.

A summary of hints which are essential to success in the cultivation of the Chrysanthemum can be placed in a concise manner. The first thing is the necessity of acquiring a knowledge of each variety and its peculiar requirements; this can be obtained only

by close study on the lines previously indicated. Incessant watchfulness and strict attention to their wants are absolutely essential at all seasons. Any person having the necessary means can grow *Chrysanthemums* up to a certain date—say the end of June. After that time a failure often follows. The reason in nine cases out of ten may be traced to neglect. At the time of the shows and for a few months afterwards the plants receive every attention, but when other work presses heavily the fever and excitement of exhibiting wanes, the plants are neglected and quickly go wrong. It is the unceasing attention bestowed upon them at all times, and more particularly during the hottest days of summer when much labour is required in watering and other cultural details, that goes a long way towards developing the blooms in all their beauty. To an enthusiastic cultivator who attains his object the hard work is little thought of when success has been achieved.

ADDENDUM.

TAKING THE BUDS OF CHRYSANTHEMUMS.—In writing upon this subject (page 60) as a part of my treatise on the culture of the *Chrysanthemum*, I advised that the buds be “taken” from about August 10th to September 1st. I have always tried to impress upon beginners that there is no necessity to do certain things on the same date exactly; indeed, it is impossible to “take” *Chrysanthemum* buds on any given day of the month, for the reason that buds do not always show on the same date each year; therefore, should they show on the 5th of August one year instead of the 10th, it is hardly likely that I should advise the removal of such buds because of their being five days too early. It has been suggested that the time I advised for “taking” the buds was quite too late for northern growers. Through the kindness of friends I am enabled to give the opinions of growers in various parts of England as to the time they find best suited for “taking” the buds. As will be seen from their reports my advice is substantiated, and as an addendum to my notes on *Chrysanthemum* culture I trust it will not be the least interesting of the series. From letters before me I quote the following :—

Mr. W. Mease, The Gardens, Wyncote, Allerton, Liverpool, says :—

“I have read your articles on the *Chrysanthemum* in the Journal, in which you advise ‘taking’ the buds from August 10th to September 1st, and from my experience I do not think safer advice could be given.”

Another noted Liverpool grower, Mr. W. Lindsay, The Gardens, Otterspool, writes :—

"Substantially your dates are the same as ours with this little exception: If any of the late-blooming varieties show their buds earlier in August we take them; the bulk of the varieties, particularly the Empress family, about August 20th; our last bud, and that a Cherub, was taken September 8th."

Mr. W. K. Woodcock, The Gardens, Oakbrook, Sheffield, says:—

"In replying to your inquiries as to the dates we in Sheffield have found most advantageous for 'taking' the buds, we have not found them to differ materially from those given by yours: If, and with very few exceptions buds 'taken' from August 10th to September 1st produce the best flowers; the exceptions are a very limited number of varieties which produce the best flowers from buds 'taken' during the first week in August."

Another cultivator situated much farther north than any of the preceding ones, Mr. T. B. Morton, Mowden Bridge Nurseries, Darlington, Durham, expresses himself thus:—

"I have carefully read your articles on 'taking' buds, and I fully agree with all you say. Only so far north as this I would 'take' buds of Meg Merrilies and Boule d'Or the first week in August. As regards the incurved section, especially the Queen family, I would take them from August 25th to Sept. 6th. About here as a rule the buds are most plentiful the first fortnight in September."

Mr. R. F. Jameson, Hessle, Hull, writes:—

"Buds of Meg Merrilies and Boule d'Or, for example, should be 'taken' as near about August 3rd as possible; other varieties from August 10th to September 1st. My flowers were late last year, therefore I thought I would be soon enough this season. Consequently I 'took' buds of some varieties during the first week in August, and I find I have been in too great a hurry, as the blooms of Mdle. Lacroix, Jeanne d'Arc, Sœur Dorothee Souille, and Margaret Villageoise are already developing fast."

From the Northern Division of the West Riding of Yorkshire Mr. Midgley, The Gardens, Bankfields, Bingley, and Mr. Shaw, Oakworth House Gardens, Keighley, each growers of 500 plants, gave me their opinions in conversations on "taking" the buds—namely, that from the middle of August to the same time in September is the best time for that locality; and Mr. W. Heath, Hampton Manor Gardens, Birmingham, informs, me "From the end of the first week in August to September 1st answers the best for 'taking' the buds for first-class blooms." It remains only to thank my correspondents for their co-operation in settling a disputed point, and to express satisfaction that my practice is confirmed so thoroughly by so many noted cultivators.

THE ADVANCE MADE IN CHRYSANTHEMUMS.

It is very gratifying to me to find that the preceding editions of "CHRYSANTHEMUMS AND THEIR CULTURE" have met with a reception so favourable that I am called on to issue another edition (the 4th), and to this add a supplement in order that the work may be brought up to date. Such a remarkable advance has been made both in numbers and quality of varieties since the issue of my first edition, that the lists then given will not meet the requirements of all growers at the present time. The increase has been especially great in the Japanese section. I have thought it desirable to allow the original lists to stand as showing more markedly the advance made in these flowers. From the many flattering letters received I have just reason to know that my previous efforts have been appreciated.

I find that the National Society's Catalogue, just published, gives no less than something over 1,900 named varieties, and out of this enormous total there are only 170 of doubtful distinctness, leaving upwards of 1,700 dissimilar. As will be readily believed, several of these are comparatively worthless, and well that it is so, or I do not know what we should do with such an immense number. Each year brings a few really good new sorts which are certainly an advance upon some of the older. As has been remarked, the Japanese section increases by far the more rapidly. The Incurved section moves slowly onwards. Yet I have been able to add four really good new sorts which will render useful service during the coming season to exhibitors. Referring again to the Japanese section, the various forms known as Reflexed, Incurved, and Loose-petalled or Tasselled varieties are so confusing to some persons at the shows that I have thought it advisable to make classified lists which may not be entirely unacceptable. Possibly before long some of the leading societies will consider the advisability of making separate classes in their schedules. This arrangement I have no doubt would meet with the approval of many exhibitors and judges. At present there is no defined standard as to what constitutes a correct Japanese Chrysanthemum, or which type of bloom combines the highest qualities, which at present is mainly a matter of individual opinion. The National Chrysanthemum Society has rendered valuable aid by initiating a separate class for Reflexed Japanese. This in my view should be even still more strictly defined. I consider that varieties coming under the head of Japanese Reflexed should be confined to that class and not allowed to be staged with the ordinary Japanese. I am at variance with the majority in admitting such as Val d'Andorre as Reflexed Japanese, as I fail to

see how this variety can be associated harmoniously with Elaine, for example, as the two varieties differ so in character. In addition to the separate lists of Japanese varieties in sections, I have given what I consider a thoroughly representative list of



Fig. 19.—Staging Chrysanthemums.

forty-eight varieties as a general guide to new cultivators, though no doubt after this season is passed a few more sorts will have sprung into favour. In the lists now given I have appended the colours of the flowers, as some persons considered the omission of

them from the first list a mistake. I hope the so-called error is remedied. Single varieties as decorative plants have come more prominently into notice, and interest in them will increase as they become better known and their merits more fully displayed when under better cultivation. For use in a cut state with other flowers, or for the decoration of epergnes or vases for dinner-table decoration, single *Chrysanthemums* have no equals; they are so light and elegant that the heavier-looking double varieties stand no chance whatever with them for that purpose. When cultivated with a view to exhibiting as cut blooms, and staged in the same manner as Pompons, three blooms together with their own foliage, they form a very attractive stand and meet with numerous admirers. The engraving (fig. 19) shows the method of staging them in a cut state.

Scented varieties demand notice, as they are certain to meet with more attention in the future, and as it becomes more widely known that there are some which possess somewhat of the fragrance of Violets. Unfortunately the number at present known to me does not exceed six, but now that societies are encouraging this section by offering prizes for them, others, I have no doubt, will be added to the list. In a special article I give the details of culture that I have found best suited for their growth.

Another class also calls for comment, that of Fimbriated varieties, so called by reason of their florets being fimbriated or notched, rendering them attractive in appearance and distinct in character. The varieties are yet few in number; all having full, rounded flowers, perhaps too small to be shown singly; but set up in the same manner as Pompons, three in a bunch, they make an attractive stand.

CULTURE OF FRAGRANT CHRYSANTHEMUMS.

THE fragrance of the single pink variety, Mrs. Langtry, is much more pronounced and agreeable than that of any other. One or two plants of this, if well-grown in "bush" fashion, so that numbers of blossoms are developed at the same time, will perfume a whole house. Cuttings should be inserted during January, either singly or two in a 3-inch pot. When the plants are 4 inches high pinch out the point of each to induce side branches. Select about three of the strongest of these, removing any others. When those retained have grown from 4 to 6 inches long pinch out the points again. From these new breaks select six of the strongest shoots. No other pinching will be needed. These may be allowed to grow and will in time produce a plentiful supply of flowers. The two reflexed varieties, Dr. Sharpe and Progne, should have some of the weakest growing branches removed from

the lower part of the main stems. Thinning the buds also will induce a fuller development of the flowers; but in the case of the single variety, Mrs. Langtry, and the Anemone Pompon, Dick Turpin, all branches proceeding after the six branches are selected should be allowed to grow and all bloom buds develop. The soil used for potting should not be too rich, nor the pots too large where space is a consideration. Mrs. Langtry and Dick Turpin may be grown two plants of each variety in one pot of 9 inches in diameter.

FORTY-EIGHT JAPANESE VARIETIES FOR CUT BLOOMS.—M^{de}me. C. Audignier, deep mauve; Belle Paule, white edged with rosy purple; Edwin Molyneux, purple, crimson and gold; Boule d'Or, rich yellow tinged with bronze; Jeanne Delaux, dark velvety crimson; Mr. H. Cannell, soft yellow; Mrs. H. Cannell, snowy white; Avalanche, snowy white; Fair Maid of Guernsey, white; Meg Merrilies, white, sulphur centre; Mr. Ralph Brocklebank, primrose yellow; Triomphe de la Rue des Châlets, salmon red; Val d'Andorre, chestnut, shaded orange; Criteron, orange amber; Baron de Prailley, rose; Thunberg, orange yellow; Mrs. J. Wright, pure white; M^{lle}. Lacroix, pure white; Duchess of Albany, orange buff; M^{de}me. Laing, white, flamed rose; M. Astorg, silvery white, blush centre; Gloriosum, sulphur yellow; Frederick Marrouch, golden yellow; Carew Underwood, bronze amber, shaded rose; Lady Lawrence, ivory white; Golden Dragon, rich yellow; Margaret Marrouch, crimson red, tipped gold; Japonaise, bronze yellow; Soleil Levant, pale yellow; Mrs. F. Jameson, orange red and gold; Mons. H. Elliott, orange brown, pale yellow tips; Grandiflora, golden yellow; M. Burnet, lilac mauve; Sceptre Toulousaine yellow, striped crimson; Bertha Flight, blush white; Comte de Germiny, nankeen yellow, striped brownish crimson; Mr. C. Orchard, golden bronze; Album fimbriatum, pure white; Peter the Great, lemon; Balmoreau, rose purple; Florence Percy, pure white, cream centre; Martha Harding, golden yellow, shaded orange; Sarah Owen, golden bronze; Stanstead White, snowy white; M^{lle}. Blanche Pigny, sulphur white; M. Delaux, reddish crimson; Mr. John Laing, reddish brown; Fernaud Feral, rosy mauve.

EIGHTEEN VARIETIES, JAPANESE REFLEXED.—Elaine, pure white; Maiden's Blush, creamy white, blush tinted; Dr. Macary, rose and white; L'Africaine, crimson red; La Nympe, lilac peach; La Triomphante, white, suffused purple rose; Mons. H. Jacotot, rich crimson, gold tips; Père Delaux, dark velvety crimson; Triomphe du Nord, bronze crimson; Amy Furze, blush rose, lilac tinged; Flambeau, bright orange crimson; M^{de}me. Madeline Tezier, white, tinted blush; Margot, rosy salmon; Tendresse, rosy lilac; Etoile du Midi, orange red, tipped

gold; Mdle. Paul Dutour, white, tinted rosy lilac; Flocon de Neige, white; Beauté des Jardins, purple amaranth.

ADDITIONAL INCURVED VARIETIES.—Mrs. Norman Davis, rich golden yellow; Charles Gibson, deep bronze red, centre fawn; Bronze Queen of England, bronze lilac; Golden John Salter, golden amber; Lord Eversley, pure white, sport from Princess Teck; Perle Precieuse, rose purple, back of florets silver.

ADDITIONAL JAPANESE ANEMONES.—Bacchus, rich velvety crimson, guard florets silver under side; Margouline, purple rose; Ratapoil, bronzy red; Madame Ghys, lilac guard florets, rose lilac disc.

TWELVE SINGLE VARIETIES.—Lady Churchill, brick red; Jane, white; Mrs. Langtry, pale pink; Mrs. Wills, white, suffused pink; America, blush; Helianthus, bronze yellow; Mrs. Dr. Duke, pale lilac; Crushed Strawberry, as its name implies; Patience, amaranth, tipped white; White Perfection, white; Mrs. A. Le Mout, amaranth crimson; Queen of Yellows, yellow.

SIX SCENTED VARIETIES.—Progne, amaranth; Dr. Sharpe, amaranth; Mrs. Langtry, pale pink; Dick Turpin, magenta crimson and yellow; Beauté des Jardins, amaranth; Leon Lassallii, white.

TWENTY VARIETIES INCURVED JAPANESE.

Comte de Germiny
Sam Henshaw
Mr. H. Cannell
Mrs. H. Cannell
Mdme. C. Audiguier
Thunberg
Lady Lawrence
Japonaise
Grandiflora
Mr. C. Orchard

Stanstead White
Pelican
Edwin Molynaux
Mons. Freeman
Golden Dragon
Soleil Levant
Boule d'Or
Moonlight
Roi des Japonais
Mdle. Moulise

THIRTY VARIETIES LOOSE-PETALLED OR TASSELLED JAPANESE.

Belle Paule
Fair Maid of Guernsey
Triomphe de la Rue des Châlets
Meg Merillies
Avalanche
Mr. Ralph Brocklebank
Mrs. J. Wright
Duchess of Albany
Baron de Prailley
Carew Underwood
Gloriosum
Le Sceptre Toulousaine
Mdme. Bertier Rendatler
M. Astorg
Mons. Tarin

Jeanne Delaux
M. Ardene
Margaret Marrouch
Mons. H. Elliott
Frederick Marrouch
Florence Percy
Edward Audiguier
Flamme de Punch
Mrs. Garnar
Mdle. Lacroix
M. Delaux
Comtesse de Beauregard
Hiver Fleuri
Fernand Feral
Sarnia

FIMBRIATED VARIETIES.—Chardonnet, bright purple; Crœsus, bright orange, shaded crimson; Scapin, rosy crimson; Masange, blush pink.

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- 6 " " Babianas.
- 6 " " Tritonias.
- 50 Choice Named Crocus.
- 50 Snowdrops, large roots.
- 12 Scilla Sibirica.
- 6 White Freesias, sweet-scented.
- 20 Chionodoxa Luciliae (Glory of the Snow).

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- 100 Fine Tulips, various.
- 50 Anemones, various.
- 50 Ranunculus, various.
- 100 Snowdrops, double and single.
- 10 Elwes Giant Snowdrops.
- 6 Scilla Sibirica.
- 12 Chionodoxa Luciliae (Glory of the Snow)

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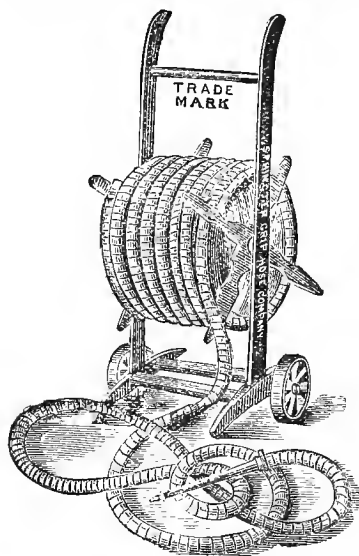
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